THE ECONOMIC JOURNAL

VOLUME LXVIII

THE ECONOMIC JOURNAL

THE JOURNAL OF THE ROYAL ECONOMIC SOCIETY

Edited by

R. F. HARROD and E. A. G. ROBINSON

assisted by

R. C. O. MATTHEWS

VOLUME LXVIII

LONDON: MACMILLAN AND CO LIMITED

NEW YORK: THE ST MARTIN'S PRESS

1958

Printed in Great Britain by
Richard Clay and Company Ltd.,
Bungay, Suffolk

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No. 269 MARCH 1958 Vol. LXVIII

THE ECONOMIC JOURNAL

THE QUARTERLY JOURNAL OF THE ROYAL ECONOMIC SOCIETY

Edited by R. F. HARROD *and* E. A. G. ROBINSON
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EQUILIBRIUM AND DISEQUILIBRIUM: MISPLACED CONCRETENESS AND DISGUISED POLITICS

A TERM which has so many meanings that we never know what its users are talking about should be either dropped from the vocabulary of the scholar or "purified" of confusing connotations. Since I believe it is impossible to exclude the terms "equilibrium" and "disequilibrium" from the economist's discourse, I propose that they be subjected to a thorough cleaning job.[1] In attempting this task I shall not be concerned with the meanings of these terms in other disciplines.

I. A BRIEF REVIEW OF THE USE OF EQUILIBRIUM CONCEPTS IN ECONOMICS

Economists have used the notion of equilibrium in a variety of contexts and for a variety of purposes; in proceeding from one topic to another some have failed to note transformations in the use made of it and in the meanings read into the term. Not a few who have sensed incongruities, fallacies or outright misuse turned against all "equilibrium economics," heaping abuse on any type of analysis that employed the notion.

The Major Uses of Equilibrium Concepts in Economics

The most literal use of equilibrium or disequilibrium in the sense of equal or unequal weights on the two arms of a scale, without any analytical, explicatory, predictive or evaluative connotation, occurs only in connection with practically measurable quantities, such as income and expenditure in a budget, exports and imports in a trade balance, trade items and long-term capital transfers in a balance of payments. Yet even in these contexts economists have rarely been content with merely weighing the items on the two sides; they have usually wanted to connect them with other economic variables which they considered relevant for a more "inclusive" equilibrium or disequilibrium of the balance in question.

The most prevalent use of the equilibrium concept in economics is probably as a methodological device in abstract theory. Here "equilibrium"

[1] The ruthless criticism to which my colleague Dr. Edith Penrose subjected an earlier version of this paper is gratefully acknowledged. Thanks to her warnings, I was able to eliminate several flaws of exposition and several offences of over-aggressiveness.

is employed in connection with " models " containing several interrelated variables; as a " useful fiction," it serves as a part of a mental experiment designed to analyse causal connections between " events " or " changes of variables."

It is a different use of the equilibrium idea when it is employed to refer to concrete economic situations: here it is supposed to characterise a historical situation as one that has lasted or will last for a relatively long time without significant change. The direct application of the concept to observed situations makes it " operational," as it were. The jump from equilibrium as a methodological device (useful fiction, purely mental construct) to equilibrium as a characterisation of a concrete historical situation (operational concept) is a big one; that many take it without noticing any strain and without noting the difference, is attributable, I shall argue, to their failure to recognise the function of the analytical concept, and is conducive to considerable confusion.

A jump in a different direction has been taken from an analytical equilibrium concept to an evaluative one. It is easy to see how it happens: the notion of equilibrium as a balance of forces acquires a connotation of " appropriateness " when the balance is thought of as one of " natural forces "; or even a connotation of " goodness " when that balance is thought of as " harmony." Once the use of equilibrium as a value judgment is condoned, the replacement of the mystical " natural " forces by " progressive " political forces appears indicated, and a variety of social goals is incorporated in the concept of equilibrium. Eventually, equilibrium comes to mean conformance with certain objectives which organised society is asked to pursue. I shall argue that such equilibrium with built-in politics often impairs the usefulness of equilibrium as a value-free analytical device.

Another evaluative equilibrium concept is used in welfare economics. In the theoretical models of the household and the firm " equilibrium " is assumed to be sought between the various items of the plans and dispositions of the individual decision maker so that he would find no reason to make further changes. The older welfare economists promoted this equilibrium from a methodological device (for the explanation of change) to a standard of evaluation (marking the best positions attainable); and all these equilibria became " optima " and integral parts of the maximum welfare position for the whole community. Modern welfare economists deal with the value judgments that were implicit in such a procedure, and try to bring them out into the open. Propositions about conditions under which certain " allocative and distributive equilibria " in the economy as a whole would coincide with whatever is regarded as the " highest social welfare function " are then formulated and qualified with care.

The present paper will not be concerned with welfare economics. But it will be concerned, to some extent, with the use of a value-laden equilibrium concept in positive (explicatory) economics. The chief purpose of

the paper is to show the dangers to clear analysis that may arise from the failure to notice the differences between analytical, descriptive and evaluative equilibrium concepts. As a prerequisite, we shall have to pay closer attention than has usually been given to the function of the purely analytical equilibrium concept in economic theorising.

The Basic Idea: Disturbance and Adjustment

In economic analysis some events (or changes of economic variables) are interpreted as the "adjustment" of the system to a "disturbance" consisting in some antecedent events (or changes of economic variables). Several alternative expressions are used to express this idea of adjustment to disturbance; for example, responses to an impulse; reactions or repercussions to a substantive change; effects or consequences of a cause; induced changes following an autonomous or spontaneous change; equilibration following a disequilibrating event. A conceptual scheme is constructed to establish a causal connection between two changes, or two sets of changes; this cause-and-effect relationship is understood, for purposes to be shown presently, as disequilibration-plus-equilibration, or a departure from one position of equilibrium followed by a movement toward another position of equilibrium.

The idea of equilibrium is employed in this scheme as a mental tool, a methodological device; it aids in establishing to our satisfaction a causal nexus between different events or changes. Events or changes can be imagined as well as observed; a causal connection between them can only be imagined, and the idea of equilibrium has the function, as we shall presently see, of making this connection plausible.

II. The Role of Equilibrium in Economic Analysis

After a brief discussion of the contents and working of "models" in economic analysis we shall present a four-step scheme of causal reasoning, exhibiting the strategic use of equilibria. We shall then proceed to a discussion of the relativity of equilibrium with respect to the variables selected, to the interrelations assumed and to the adjustment time allowed. And we shall attempt a definition of equilibrium.

The Contents and the Working of a Model

An analytic model in economics need not be "made out of algebraic functions or geometric curves or some other fancy building material."[1] It can be described entirely in plain words, unless this gets too clumsy. But no matter how it is done, the model inspector should be provided with a full specification of its contents.

[1] Fritz Machlup, *The Economics of Sellers' Competition* (Baltimore: Johns Hopkins Press, 1952), p. 5. Some of the ideas presented in the present paper were alluded to in the book.

The model usually contains a number of variables (*e.g.*, prices, outputs, incomes, exports, etc.,) and a number of stipulated relations between variables (*e.g.*, quantity demanded will vary in a certain way with the price charged; aggregate imports will be some function of disposable income, etc.). Besides the relationship of identity (*e.g.*, income is the sum of consumption and investment), there may be technological relationships (*e.g.*, between input and output), institutional relationships (*e.g.*, between tax payments and income), and economic behaviour relationships (*e.g.*, between cash balances and expenditures). The model is put to work when the mental experimenter manipulates a change of an " independent " variable and " watches " how this will affect the dependent variables acting upon one another according to the assumed relationships.

The Four Steps

The following scheme illustrates the step-by-step working of a model; each step is described both in customary technical terms and in terms of catch-phrases in everyday language:

Step 1. *Initial Position:* " equilibrium," *i.e.*, " Everything could go on as it is."

Step 2. *Disequilibrating Change:* " new datum," *i.e.*, " Something happens."

Step 3. *Adjusting Changes:* " reactions," *i.e.*, " Things must adjust themselves."

Step 4. *Final Position:* " new equilibrium," *i.e.*, " The situation calls for no further adjustments."

Steps 2 and 3 may correspond to observable changes; sometimes only one of these is actually " observed " and the other merely expected to occur as consequent or to have occurred as antecedent, respectively. If both are observed in conjunction or succession the theorist will take this as a " verification " of the theory which links them in the described fashion, and he will have increased confidence in it.[1] But when the change which corresponds to Step 2 is called " disequilibrating " and a " new datum," and the changes corresponding to Step 3 are called " adjusting " and " reactions " (to the change considered " disequilibrating "), this is not based on observation; it is only an interpretation. To be plausible this interpretation requires two other steps.

In order to ascertain that the changes under Step 3 are the effects of those under Step 2 and of *nothing else*, we must make sure that there is nothing else in the picture that might be responsible for bringing about the changes under Step 3. There is only one way of doing this: we must isolate Step 2 as a possible cause of the changes under Step 3 by excluding from the model

[1] Fritz Machlup, " The Problem of Verification in Economics," *Southern Economic Journal*, Vol. XXII (July 1955), pp. 1–21.

any other possible causes. This exclusion of alternative causes is accomplished by Step 1, the initial position of equilibrium, the position in which " Everything could go on as it is," without any inherent tendency to change. If we were not sure of initial " equilibrium " we could not be sure that Step 3 could not occur without Step 2, simply as the result of something already present in the initial situation. The assumption of an initial equilibrium serves to guarantee the " new datum " of Step 2 the status of being the *sole* disturbing change, the *sole* cause of anything that follows in the model (that is, of the changes interpreted as " adjustment " to, or effect of, the " disequilibrating change ").

In order to ascertain that the changes under Step 3 are *all* the effects which the change under Step 2 can have in the model and that we therefore have as complete a list of adjusting changes as we care to have, we must make sure that " no further adjustments " are required by the situation. There is only one way of doing this: we must proceed with the sequence of adjusting changes until we reach a situation in which, barring another disturbance from the outside, everything could go on as it is. In other words we must proceed until we reach a " new equilibrium," a position regarded as final because no further changes appear to be required under the circumstances. The postulate of the final equilibrium serves to guarantee that the list of " adjusting changes " under Step 3 is *complete.*

In a nutshell, we have here a mental experiment in which the first and last steps, the assumption of initial and final equilibria, are methodological devices to secure that Step 2 is the sole cause and Step 3 contains the complete sequence of effects. The function of the initial equilibrium is to assure us that " nothing but 2 " causes the changes under Step 3; the function of the final equilibrium is to assure us that " nothing but 3 " is to be expected as an effect of the change under Step 2 (although the " completeness " of the list of effects will always be merely relative to the set of variables included in the equilibrium).

Some simple analogies exist between the pattern of mental experiments and that of laboratory experiments. Step 1, the assumption of an initial equilibrium, corresponds to the requirement of a *controlled* experiment that conditions be kept constant and the manipulated change of the selected variable thus be isolated from changes of other independent variables. Step 4, the assumption of a final equilibrium, corresponds to the requirement of the *complete* experiment that all changes be observed and noted until no further changes in dependent variables occur.

Wide Choice for the Set of Variables in Equilibrium

The economic theorist enjoys great freedom of choice in the construction of his models and in the selection of the variables included. The restraints are few and not very confining: logical consistency of the entire model, relevance of the chosen variables to the problem analysed, " understanding "

of the assumed relationships between them as plausible and applicability of the model in the sense that the events or changes assumed and deduced (as Steps 2 and 3, respectively) more or less " fit " events or changes observed or known to occur in reality. This leaves the choice of what to put into the " equilibrium " wide open. The system may contain few variables or many; it may postulate inter-relationships of many different kinds; it may deliberately exclude interactions of variables which take a long time to work themselves out or, on the other hand, it may disregard regular oscillations of some variables within short intervals of time. (It is chiefly this freedom of choice which makes it often almost meaningless to declare a concrete economic situation in the real world, identified by historical time and geographic space but not specified with regard to the variables selected, as a position of equilibrium or disequilibrium.)

To realise the extent of freedom in the selection of variables that are supposed to be in equilibrium one has only to think of the simple models of " aggregative equilibrium " and of their successive extension through the inclusion of additional variables or relations. One may first recall the standard equilibrium between the three strategic aggregates, national income, consumption and investment, linked by a simple consumption function, with investment assumed to be given. One may then recall the more complicated aggregative equilibria comprising one or more of the following relations or variables: an investment function making investment depend on income or consumption, or on absolute or relative changes in income or consumption; varying proceeds from exports and payments for imports, with the former affecting income, and with the latter dependent on income; varying government expenditures and tax revenues, dependent on income and affecting consumption (and possibly also investment); a consumption function linking consumption to various past values of income, to values of real assets, to values of cash assets; and so forth. The possible combinations of even this small number of aggregate variables and relations permit an enormous variety of equilibrium positions. Yet, all these equilibria still disregard such variables as prices, wage-rates, interest rates, foreign-exchange rates, all of which are possible candidates for inclusion in the system.

The " relativity " of an " equilibrium in international trade " with regard to the relations and variables included or disregarded merits separate comment. For some problems one will choose to start from a position of balanced trade; for other problems one will choose to start from a position of a given volume of foreign investment, and hence from an " equilibrium export surplus," a surplus consistent with an equilibrium in the foreign-exchange market; and again for other problems one will choose to start from an equilibrium of income, consumption, saving and investment, with a surplus or deficit in the foreign-exchange market as part of the volume of investment consistent with the magnitudes of the other aggregates. If the

system includes only these aggregates, but disregards the foreign-reserve position and bank liquidity, final equilibrium may be said to be reached with a trade deficit, the latter being equal to the excess of home investment over total saving. This final equilibrium—where no further adjustment is required of the selected variables—may involve continuing changes of neglected variables: for example, the foreign reserves may continue to dwindle towards zero and the loan portfolios of banks may go on expanding without limit.[1]

Frequently equilibrium will refer to a set of variables that fails to include some which are both relevant and significant for practical problems; such an equilibrium is sometimes denounced as a worthless or dangerous tool of analysis. To be sure, if an economist were to base policy recommendations on an analysis confined to such oversimplified equilibrium models he would be guilty of a gross lack of judgment. Yet such models may have considerable heuristic value. This value is not impaired if an important factor is left out, provided the omission is not inadvertent. Indeed, the importance of any factor can be demonstrated only by leaving it out of account and then showing the difference it makes when it is reinstated as one of the variables in the equilibrium system.

Time and Equilibrium

More often than not, time is left out in the construction and operation of equilibrium models. If time is taken into account this is done in various ways, implicitly or explicitly.

In so-called period analysis, time is given two roles: it appears as an independent variable and as a subscript to other variables. In the latter role it "dates" the quantities which are linked by the lagged interrelations stipulated—where the value of a variable at one period is related to the values of the same and/or other variables at other periods. And as a separate independent variable, time will determine the magnitudes which the other variables will have reached at certain points on their way to their equilibrium values and, moreover, will serve to identify final equilibrium as the position where a further increase of t will leave all other magnitudes unchanged.

In period analysis as well as in some other kinds of sequence analysis, successive positions are sometimes "temporary equilibria," regardless of whether or not the model can ever reach a final equilibrium; in other instances, however, the successive positions, although determinate, are not accurately characterised as temporary equilibria. As an example of the former type we may think of the sequence of prices and quantities sold in a model depicting the cobweb theorem. If the (timeless) demand curve is steeper than the (time-lagged) supply curve the model will not yield a final

[1] Fritz Machlup, *International Trade and the National Income Multiplier* (Philadelphia: Blakiston, 1943), pp. 85–7, 172–3, 208.

equilibrium, while the intersections of the " instantaneous supply curves " with the demand curve will each mark a point of temporary equilibrium. Every one of these equilibria is stable (in the sense that random deviations are self-correcting); it is also " final " with respect to the particular instantaneous supply curve—although it is " temporary " if the time-lagged supply curve is taken into account. Thus, one and the same position, defined by a definite set of variables of given magnitudes, will be both an equilibrium or a disequilibrium, depending on the length of time that is taken into account.[1]

In dealing with this question, the theorist has a choice between two equivalent procedures: he may either vary the maximum time interval allowed for the process of adjustment (with given time coefficients of the relations involved) or change the combination of variables making up the model. The latter is Alfred Marshall's procedure for showing the adjustments in the supply of a particular product. He distinguishes between an instantaneous market equilibrium, a short-run market equilibrium and a long-run market equilibrium, not in terms of the time needed for the adjustments to take place, but by extending the list of dependent variables: for the first equilibrium, production is fixed; for the second, production is variable, but productive capacity is fixed; for the third, productive capacity is variable, and only the productive resources potentially available to the industry are fixed. Time itself is not a variable in the model; instead, there are three models (or sub-models) with separate equilibria; each equilibrium is " final " on its own terms, though " temporary " in terms of a model with more variables.[2]

It would be mistaken to think that an extension of the list of variables is always equivalent to a " longer-run " adjustment. The opposite may be

[1] Certain equilibria in physics and chemistry are of the same type. Take the example of a simple scale (*libra*, in Latin) with two pans of different shapes but equal weight and volume, containing equal quantities of water. The equilibrium will be only temporary, since evaporation of the water will be faster from the pan with the larger open surface; there will be instantaneous equilibrium (before any water has evaporated), short-run disequilibrium (after some unequal quantities of water have evaporated) and long-run equilibrium (after all the water has evaporated from both pans). Similarly, there may be chemical equilibrium after a very small time interval but not for longer periods, depending on whether only the fast reactions or also the slow reactions are taken into account.

[2] Incidentally, no student who understands these conceptions will fall into the error of identifying a concrete situation, involving the prices paid and quantities produced in a certain country at a certain time, as a position of long-run equilibrium. All these equilibria are purely hypothetical. Never could anybody " know " that all adjustments to past events have been completed—or will ever be completed. If calendar time were substituted for the Marshallian " long run," the long-run adjustment to a decline in the demand for a product might take some thirty years or more, involving the gradual wear and tear and successive scrapping of productive capacity. Could anybody assume for the real world—what *has* to be assumed for the purpose of thinking things through—that demand and technology and all other things will remain unchanged over a period of such length? Surely, the conceptual apparatus with its final equilibrium was not intended to yield a description of an actual *situation*, but rather to ensure that full attention is given to *all the processes of change* which could be interpreted as the effects of the event or change regarded as the disequilibrating datum.

true: the addition of variables to the set may shorten the adjustment period. Take, for example, the simple saving–investment equilibrium in a period model demonstrating the multiplier principle. If consumption is related to income received in the preceding period, and the marginal propensity to consume is high, the number of periods required to bring income close to its final equilibrium value would be enormous. This model implicitly assumes unlimited supplies of unemployed resources and of idle or newly created cash. If the model is expanded to include such variables as (limited) unemployment, wage-rates, (limited) money supply and interest rates the equilibration of this larger set of variables will take place in a much smaller number of time periods (and, of course, the equilibrium value of income will be smaller).[1]

Just as equilibrium may by design take no account of adjustments that go beyond a certain set of variables or beyond a certain time, equilibrium may also by design overlook certain short-term oscillations or fluctuations. For example, changes in demand or production that can be interpreted as regular fluctuations—relating to different hours of the day, days of the week, seasons of the year—may be accepted as part of a stationary equilibrium (or simply disregarded if the fluctuations are irrelevant to the problem at hand), provided the "underlying conditions" remain unchanged throughout the process.[2] But oscillations and fluctuations must not be admitted as part of an "equilibrium position" unless one may assume that they can, under the rules of the model, continue in perfect periodicity, without any change in amplitude or rhythm.

Definition of Equilibrium

We have not thus far attempted to formulate a definition of equilibrium, though the meaning of the term has probably become quite clear. In the light of the preceding discussion we may define *equilibrium*, in economic analysis, as *a constellation of selected interrelated variables so adjusted to one another that no inherent tendency to change prevails in the model which they constitute.* The model as well as its equilibria are, of course, mental constructions (based on abstraction and invention).

It has been suggested to me that the phrase "balance of forces" should be a part of any definition of equilibrium. I cannot accept this suggestion; "balance of forces" is simply another metaphor, perhaps a synonym but not an explanation of "equilibrium," and sadly encumbered by the reference

[1] There have been economists grumbling about "how anybody can speak of an *equilibrium* leaving out so many crucial variables." Such grumbles would be justified if they were directed against the choice of variables and relations, against the usefulness of the model and, especially, against policy recommendations that are based on them. But if the grumbles are about "speaking of an equilibrium" in such a case they are methodologically unsound. Equilibrium and disequilibrium refer to whatever model you may have in mind.

[2] The technique of "disregarding" oscillations of quantities (demanded, supplied, produced) is either to reduce them to an average or to express them as rates per unit of time where the time unit embraces the whole "cycle."

to " forces," which is a rather mystical concept in need of a separate time-consuming cleaning job. But if it is believed that additional metaphors can be helpful in defining or explaining equilibrium, then I should propose the phrase " peaceful co-existence " between selected variables of given magnitudes. Where such " peaceful co-existence " is not possible, where the selected variables are *not compatible* with one another in their given magnitudes, one or more of them will have to change, and will continue to change until they reach magnitudes that make it possible for them to live with each other as they are.

Thus, as an alternative definition of equilibrium we may propose *mutual compatibility of a selected set of interrelated variables of particular magnitudes.* Assume the set consists of variables *A*, *B*, *C* and *D*, and that certain interrelationships between them are assumed (in the form of behaviour equations, technological, psychological or institutional relations, as well as mere definitions). If these variables are compatible in their " present " magnitudes " everything could go on as it is." Then " something happens " which increases variable *C*. In its new magnitude *C* is no longer compatible with *A*, *B* and *D*, and " things must adjust themselves." Which of the variables will " give " and by how much will depend on the rules of the game, expressed in the relationships assumed between the variables. At last, the new values of the four variables may be such that they are again compatible with one another, and " the situation calls for no further adjustments."

The crux of the matter is that the addition of another variable, somehow related to one or more of the others, would change the picture. The magnitudes in which *A*, *B*, *C* and *D* are mutually compatible when they are the only players in the game may constitute serious incompatibility when they are joined by another player, say *E*, of a certain size. But another addition, say *F*, may neutralise the " disturbing " effect of *E*, and *A*, *B*, *C*, *D* in their " present " magnitudes may again be compatible and " everything could go on as it is." One cannot overemphasise this *relativity* of compatibility and incompatibility regarding extra variables included in, or excluded from, the selected set. Only a complete enumeration of the variables selected and interrelations assumed makes it meaningful to assert their mutual compatibility or incompatibility, that is, the equilibrium or disequilibrium of the chosen set. And, while a *specification* of the selected variables and assumed interrelations is required for every model and every problem, the *definition* of equilibrium and disequilibrium must not narrow the freedom of choice.

III. Misplaced Concreteness and Disguised Politics

Although I recognised the existence of other equilibrium concepts in economics, I have discussed only the one designed for theoretical analysis. I strongly suspect that those who use equilibrium concepts for other purposes, such as the description of historical situations or their evaluation, believe

that one and the same concept can do double or triple duty. This I challenge. My task in this section will be to show that the concept described in the previous section cannot be used for other purposes without losing much of its usefulness in analysis.

Not an Operational Concept

Equilibrium as a tool for theoretical analysis is not an operational concept; and attempts to develop operational counterparts to the construct have not been successful.[1] Some of the variables in a model usually have statistically operational counterparts; in rare instances all have. But even in this event the *compatibility* between the variables is always a question of the assumed interrelations and of the limitation of the model to the variables selected. The " real world " surely has infinitely more variables than any abstract economic model, and their " actual " interrelations are neither known nor, I fear, knowable (partly because they probably change unpredictably over time). It follows that the equilibrium between selected variables could not be observed even if each of the variables had an observable counterpart in the real world.

Some of the variables in a model which have observable and measurable counterparts can sometimes be arranged in sub-sets in the form of balance sheets, T-accounts or financial statements, permitting us to strike a balance between the two sides and to speak (confusingly) of an " equilibrium " or " disequilibrium " in that sub-set. For example, exports and imports can be arranged as a trade balance, or foreign-trade items and certain capital and other transfers can be arranged as an accounting-balance of payments.[2] A so-called equilibrium for these items means merely equality of the sums on each side of the account, and a so-called disequilibrium means inequality of the sums. But only when this sub-set is linked with other variables—income, consumption, investment, prices, employment, wage-rates, exchange rates, interest rates, foreign reserves, bank reserves, bank loans, etc.—does it become a factor in economic analysis. And only after the variables are selected and their interrelations assumed can we speak of equilibrium and disequilibrium in the sense in which these terms are used in economic analysis. Despite the operational sub-set, the model as a whole and its equilibrium are not observable, not operational; they remain mental constructions.

Perhaps similar, perhaps very different considerations once led Per Jacobsson to make this observation on the subject: " You can no more define equilibrium in international trade than you can define a pretty girl,

[1] Schumpeter once proposed a statistically discernible " neighborhood of equilibrium," with reference to cyclical fluctuations of business activity. But he always insisted on the purely fictitious and instrumental character of the equilibrium concept itself. Joseph A. Schumpeter, *Business Cycles* (New York: McGraw-Hill, 1939), pp. 68–71.

[2] For an exposition of the differences between the " accounting balance," the " market balance " and the " program balance " of payments see Fritz Machlup, " Three Concepts of the Balance of Payments and the So-called Dollar Shortage," Economic Journal, Vol. LX (1950), pp. 46–68.

but you can recognise one if you meet one." [1] I like this remark for its charm and wit, but I wonder whether it hits the mark. I think I am quite competent to recognise a pretty girl, though my taste may not be the same as that of other expert observers. But I cannot recognise an equilibrium in international trade no matter how hard I look. I can define it, at least to my own satisfaction; but I cannot recognise anything in reality—in the statistical figures representing the " facts " of a " real situation "—as an equilibrium in international trade in the sense discussed, that is, as a position where " everything could go on as it is " and " the situation calls for no further adjustments " to anything that has happened.

To characterise a concrete situation " observed " in reality as one of " equilibrium " is to commit the fallacy of misplaced concreteness. At best, the observer may mean to assert that in his opinion the observed and duly identified situation corresponds to a model in his mind in which a set of selected variables determine a certain outcome, and that he finds no inherent cause of change—that is, that he believes only an outside disturbance, not in evidence at the moment, would produce a change in these variables. This, of course, is a personal judgment, meaningful only if the variables are fully enumerated and the assumptions about their interrelations are clearly stated. As matters stand, any concrete economic situation may correspond at the same time to an equilibrium of one model and a disequilibrium of another.

The use of the analytical equilibrium concept as a designation of a concrete historical situation is regarded as " misplaced concreteness," first, because of the general fallacy involved in jumping the distance between a useful fiction and particular data of observation and, second, because of the fallacy involved in forgetting the relativity of equilibrium with respect to variables and relations selected. An indefinite number of models may be found to " fit " a concrete situation in one way or another, and the choice is not dictated either by any so-called realities of life or by any conventions of the analysts.[2]

The phrase " relativity of equilibrium " gives expression to the facts that any number and combination of variables may be chosen for a model, depending on the analytical or didactic habits, skills and purposes of the economist; that the same values of variables may account both for equili-

[1] Per Jacobsson, in a speech in 1949.

[2] To be sure, there are " observed " situations which invite characterisation as " disequilibria " without serious danger of confusion. For example, there will be little doubt about just what model and what variables are referred to when some gross instances of price fixing, either with unsold supplies not disposable at the official minimum price or with queues of would-be buyers lined up to get some of their demand satisfied at the ceiling price, are characterised as " market disequilibria." The implication, apparently, is that the situation could not endure were it not for the " interference." On the other hand, a model that includes government price fixing, penalties for violations, unsold stocks, unsatisfied demand, etc., among its variables would show the surplus stocks or the unsatisfied demand as the " final equilibrium "—though only as " temporary equilibrium " if some lagged black-market behaviour functions are added to the list of assumptions.

brium or disequilibrium, depending on the other variables with which they are made to keep company and on the relations assumed to prevail between them; and that different problems (perhaps concerning the same concrete situation) may call for very different models for use in analysis.

Not the Same as Stability

Stability in the sense of invariance over time has some connections with the notion of equilibrium which may easily lead to confusion. Since equilibrium is the position where everything is so well adjusted to everything else—in the model—that things can go on without change, this surely implies stability over time (at least until the next disturbance). And since a disturbing change must be isolated—in the model—from anything else that might require adjusting changes, this implies that " all other things remain unchanged "—particularly the interrelations assumed for the model; all in all, we presuppose the stability of a lot of things for the duration of the process that is pictured as " equilibration " in the model. With everything stable at the beginning and at the end of the imagined process, and many things stable while it goes on, the logical tie between stability and equilibrium is certainly a close one.

In addition, there is the very special meaning of " stability of equilibrium " according to which a " stable equilibrium " is distinguished from an " unstable " one depending on the presence or absence of a mechanism for the " self-correction " of random deviations from the equilibrium values of the variables involved.

However, none of these notions of stability has much to do with the stability of a price or quantity observed in actual fact. An actual price may be stable over a long time without forcing us to have it represented by an equilibrium price in the model that we may choose for explaining it. An actual price may be most unstable, jumping up and down like mad, and yet we may find it most expedient to explain these changes by means of models showing a quick succession of perfectly stable equilibria with different equilibrium prices due to a quick succession of exogenous disequilibrating changes.

We may conclude that " observed stability " and " observed instability " should not be confused with, or attributed to, equilibrium and disequilibrium, respectively, in analytic models.

Not a Value Judgment

Equilibrium as used in positive economic analysis—as distinguished from welfare economics—should not be taken as a value judgment, nor as a reference to a " desired state of affairs." Equilibrium is not a Good Thing, and disequilibrium is not a Bad Thing. Nor is the reverse association justified: equilibrium stands neither for the *status quo* nor for *laissez faire*, as some dissident economists have been inclined to think.

If equilibrium analysis is employed to explain a sad situation as the equilibrium outcome of certain conditions and events, it would be silly to transfer our dislike of the situation to the equilibrium concept used in the explanation. And if a sad situation is disliked and deemed intolerable, to call it disequilibrium on that account helps neither in analysing it nor in developing the best policy for improving it.

Of course, it is perfectly legitimate to allow our value judgments to suggest to us the problems for analysis. If we find it desirable to secure full employment at high wage-rates we may construct models to show us what conditions (interrelations between variables) would make full employment and high wage-rates compatible with given values of the other variables in the set; or what values these other variables would have to attain in order to be compatible with full employment and high wage-rates with given interrelations. If we or others advocate a certain full-employment policy we may construct models to show us what effects could be expected, in a variety of circumstances, if various institutional relationships were established to make interest rates, bank loans, government expenditures (or other employment-inducing variables) depend upon changes in (absolute or relative) unemployment. But none of these exercises, valuable and important though they are, would be aided by incorporating our moral values or political goals into the *definition* of equilibrium, as several economists have proposed. Some of these proposals, as we shall see in Section IV, require that full employment at given wage-rates and other desirable objectives be made part of the definition of equilibrium, so that any position in which these objectives are not attained would always have to be called " disequilibrium."

By infusing a value judgment, a political philosophy or programme, or a rejection of a programme or policy, into the concept of equilibrium designed for economic analysis, the analyst commits the fallacy of implicit evaluation or disguised politics. To choose the variables and interrelations suitable for an equilibrium analysis of problems that are dictated by value judgments and political objectives is one thing. It is quite another thing to insist on packaging these valuations with the definition of equilibrium. Indeed, the analysis of the possibilities of their realisation may be impeded by such a restrictive definition.

IV. Equilibrium in International Trade Theory

The literature on International Trade probably makes more extensive use of equilibrium concepts than any other field of economics. The pages are generously sprinkled with equilibria and disequilibria, and more often than not the writers indulge in concrete applications and also in policy advice based on some implicit hierarchy of social goals. Even some of the clearer expositors seem to have a hard time reminding themselves of their own definitions, and many a writer does not mind changing *equos* in mid-

stream and equilibrium concepts in the middle of his *libri* (if a Latin pun may be admitted).

Consistent Awareness of Relativity: Joan Robinson

There are a few exceptionally consistent and methodical writers. One of them, fully aware and mindful of the relativity of equilibrium, is Joan Robinson:

> " It is now obvious that there is no one rate of exchange which is the equilibrium rate corresponding to a given state of world demands and techniques. In any given situation there is an equilibrium rate corresponding to each rate of interest and level of effective demand, and any rate of exchange, within very wide limits, can be turned into the equilibrium rate by altering the rate of interest appropriately. Moreover, any rate of exchange can be made compatible with any rate of interest provided that money wages can be sufficiently altered. The notion of *the* equilibrium exchange rate is a chimera. The rate of exchange, the rate of interest, the level of effective demand and the level of money wages react upon each other like the balls in Marshall's bowl, and no one is determined unless all the rest are given." [1]

Built-in Politics and Simulated Stability: Nurkse

Ragnar Nurkse undoubtedly knew all this, but in his now classic essay on international equilibrium he chose to disregard it.[2] Perhaps he felt strongly that he was less concerned with the niceties of abstract analysis than with the formulation of practical monetary policies (p. 4) instrumental in attaining several social objectives: " full employment " or " good employment at the given wage structure " (p. 16), avoidance of inflation (p. 12), " reasonable stability of exchange rates " (p. 21), " freedom from severe exchange restrictions " (p. 21). He apparently believed that a programme of preventing " protracted departures " from " this happy state " (p. 34) could be more easily developed with the aid of a concept of equilibrium with built-in value judgments.

Thus, far from regarding the notion of *the* equilibrium exchange rate as a " chimera," Nurkse held that " there should be some more or less generally accepted notion as to what constitutes ' equilibrium ' and ' disequilibrium ' in regard to international exchange rates." [3] Since he found frequent changes in exchange rates undesirable, he made us " turn away from the imaginary system of freely fluctuating exchanges, in which the balance [of payments] is kept in equilibrium every hour or every day." He proposed that " the period which we contemplate in the definition of

[1] Joan Robinson, " The Foreign Exchanges," *Essays in the Theory of Employment* (Oxford: Blackwell, 2nd ed., 1947). Reprinted in *Readings in the Theory of International Trade* (Philadelphia: Blakiston, 1949), p. 103.

[2] Ragnar Nurkse, " Conditions of International Monetary Equilibrium," *Essays in International Finance* (Princeton: International Finance Section, Princeton University, 1945). Reprinted in *Readings in the Theory of International Trade* (Philadelphia: Blakiston, 1949), pp. 3–34.

[3] *Ibid.*, p. 4.

the equilibrium rate of exchange . . . should certainly not be less than a year" and preferably "long enough to eliminate 'cyclical' fluctuations," that is, "between five and ten years." The balance over such a period should be the "indication of equilibrium and disequilibrium." In brief, the "equilibrium rate" is the rate at which "there would be no net change in a country's reserve of international means of payments" over a period of five to ten years (pp. 6–7). But this is a "*true* equilibrium rate of exchange" only if the balance of payments (excluding all short-term capital movements) is "kept in equilibrium" without "additional restrictions on trade" and without "depression and unemployment at home" (pp. 9–11).

Since Nurkse did not conceal his value judgments, he is not open to the charge of disguised politics; but I doubt the analytical usefulness of his evaluative equilibrium concept, and I submit that he might have avoided confusion by choosing a different term. For example, he could have spoken of the "optimum rate of exchange," the "most desirable rate of exchange" or the "full-employment rate of exchange," instead of invoking Truth and Equilibrium by speaking of the "true equilibrium rate of exchange."

Moreover, to speak of an equilibrium over a period "long enough to permit any cyclical changes to cancel out" (p. 15) is analytically highly questionable. It virtually amounts to a confusion between equilibrium and price-stability. If it is agreed—and Nurkse does agree—that "at different levels of national income" (p. 11) or "with a different flow of foreign investment" (p. 8) the equilibrium rate of exchange would be different, is it then permissible to assume that national income (or even full-employment national income) and the flow of foreign investment will remain unchanged over the period of a cycle, over five to ten years? To be sure, one can always "average" the changing rates of income and investment over the years, but what right do we have to transfigure statistical *ex post* averages into *ex ante* norms or data to which the exchange rate should be equilibrated? If we stay on the *ex ante* level, as we should for theoretical models as well as for practical policy advice, we have no legitimate reason for assuming national incomes in the countries concerned and investment flows among them to remain even approximately unchanged over several years and, still less, for assuming that all other conditions are frozen on which "equilibrium exchange rates" would depend. Changes in technology, capital stock, labour force, industrial organisation, consumer tastes, factor prices, product prices, interest rates, bank loans, government expenditures, money stocks and so forth would surely alter the equilibrium exchange rates frequently and significantly.[1] To assume things to remain unchanged

[1] Under the gold standard one may picture the theoretical equilibrium rates as fluctuating, sometimes with considerable amplitude, around the gold par of exchange because expansions and contractions of bank reserves and deposits, enforced by the gold-flow mechanism and by the rules of the game, would raise and lower the equilibrium rates to the level of the gold par whenever they depart from it. *I know of no good reason why equilibrium exchange rates should remain stable unless monetary institutions and policies make them so.*

for the duration of a particular process in an abstract model is one thing; it is quite another thing to simulate such stability for practical purposes or to make it an integral part of a concept designed for applied analysis.

Political Criteria Supported: Ellsworth and Kindleberger

Nurkse's notion of equilibrium in international transactions and in foreign-exchange rates has been widely accepted and elaborated upon. P. T. Ellsworth and Charles P. Kindleberger, in their excellent text-books, adopt both the "several-years balance" as the standard for a concrete equilibrium and the social goals of satisfactory employment at satisfactory wages with moderate trade restrictions and reasonably stable prices as built-in criteria of a true (politically acceptable) equilibrium. They offer additional justifications. For example, Ellsworth writes:

> "But our concept of what is desirable has modified our concept of what is normal; it is now generally agreed that we must take a broader view of equilibrium. Full employment, or at least the absence of mass unemployment, is now regarded as itself a condition of equilibrium. So likewise is the absence of an inflationary rise of prices. Hence a balance of payments which can only be balanced by means of a sharp decline in income and employment, or by a rise in income to inflationary levels, cannot be considered to be in equilibrium." [1]

The Keynesian notion of an "underemployment equilibrium" appears to be rejected here, not because of any economic repercussions compelling (in an analytic model) full-employment equilibrium to be restored, but simply because unemployment is undesirable. Kindleberger, on the other hand, looks for a less normative explanation. He agrees that "large-scale unemployment . . . is compatible with a market equilibrium," but, on a wider view, "unemployment means disequilibrium, since government action to remove it is likely and will disturb the balance-of-payments position." [2] Here political repercussions are introduced into economic analysis, not through the assumption of given institutional relations (such as tax rates), but as a prediction that governments, either under political pressure or out of political conviction, will decide to do *something* to raise effective demand for products and labour. "It is suggested that, on a wider view of the social sciences, equilibrium in the balance of payments should be combined with political stability into a more generalized equilibrium" (p. 412).

Equilibrium, to Kindleberger, becomes a political concept, partly because of the political repercussions which he predicts (without specifying them), and partly (and this is a very different matter) because to him it is a state of affairs that is "desired" and sometimes "achieved." Yet

[1] P. T. Ellsworth, *The International Economy* (New York: Macmillan, 1950), p. 607.

[2] Charles P. Kindleberger, *International Economics* (Homewood: Irwin, 1953), p. 412; similarly, p. 464.

" the achievement of economic equilibrium " is contrasted with that of " other social goals, such as national political and social equilibrium or international peace." Economic equilibrium " is at best a limited objective " (p. 519). Will economists now have to agree on political philosophy and on ethical values before they can talk about equilibrium?

Relativity and Value-Neutrality: Meade I

J. E. Meade, in his treatise on *The Balance of Payments*, the most thorough analysis in this field, shows himself as the master of a house divided against itself. He is a strong believer in, and skilled user of, the equilibrium concept as a value-free, abstract methodological device; but he is also a persuasive advocate of the equilibrium concept as a standard of performance and a symbol for a comprehensive programme of economic policy striving for Good Things and avoiding the Bad; yet in the course of the analysis he finds it necessary to reduce the political comprehensiveness of this equilibrium concept, and to break it down into separate equilibria of much smaller scope. A confrontation of these three Meades with one another will be facilitated by referring to them as Meade I, Meade II and Meade III, joint authors of Volume One of *The Theory of International Economic Policy*.[1]

Meade I opens the book with a resolute declaration in the Preface:

> " The method employed in this volume is first to consider a number of countries in at least partial or temporary equilibrium, domestically and internationally; next to introduce some disturbing factor (which is often an act of government policy) into this equilibrium; then to consider the new partial or temporary equilibrium which the economies will attain when the direct and indirect effects of the disturbing factor have fully worked themselves out; and finally to compare the new position of equilibrium with the old " (p. viii).

Meade's scheme of the equilibrium model, presented in Chapters IV and V, corresponds in almost every respect to the one proposed in this article. There is the division of the argument into the same four steps—" old position of equilibrium "; " spontaneous disturbance "; " repercussions " with " ultimate effects "; " new position of equilibrium." [2] There is also the recognition of the relativity of equilibrium regarding selected variables,

[1] J. E. Meade, *The Theory of International Economic Policy, Volume One: The Balance of Payments* (London: Oxford University Press, 1951).

[2] " We shall confine ourselves to a comparison of the new position of equilibrium which results when some spontaneous disturbance has occurred and has had time to work out all its repercussions, with the old position of equilibrium which existed before the disturbance occurred " (*ibid.*, p. 58). The scheme is deemed necessary in order to ascertain the " ultimate effects " of the disturbance (p. 52). The only difference between Meade's scheme and mine is his inclusion of " policy changes," besides " induced changes," among the adjusting changes (pp. 42 ff.). I would treat reactions of the Government to the disequilibrating change either as part of the induced changes (though only if they follow from the assumed institutional behaviour equations) or as an additional datum (if they are not sufficiently " regular " to be subsumed among the given relations between the selected variables of the system).

disregarding variables not included in the model. For example, Meade I allows unemployment to exist in a position of equilibrium,[1] initial or final; he allows " a new equilibrium " to be reached which " involves a deficit in [a country's] balance of payments " (p. 60) and which thus would be a disequilibrium if foreign reserves, etc., were included among the selected variables. And all these equilibria and disequilibria are " value-neutral," that is, free from political value judgments, free from connotations of good or bad, desirable or undesirable, politically acceptable or unacceptable.

Alliance with Political Value Judgments: Meade II

Not so for Meade II, who wrote Chapter I of the book. He begins with a country " suffering " from a disequilibrium (p. 3) and he clearly identifies " balance-of-payments difficulties " with " balance-of-payments disequilibrium " (p. 14). After showing that a country's deficit on trade items and unrequited transfers " does not necessarily represent a disequilibrium in its international position " (p. 8), he finds that its " true balance-of-payments deficit " is the " balance of autonomous trade and transfers," which " must be matched by what we have called accommodating finance." [2] But even such a " true " deficit " would be much too narrow a criterion of a disequilibrium in the balance of payments " (p. 13); to Meade a merely " potential " deficit is a sufficient criterion. For it is not the actual balance or imbalance but rather a " potential " deficit or surplus " which is the proper measure of a balance-of-payments disequilibrium " (p. 15). Such a disequilibrium without actual deficit exists if the deficit is *avoided* by resort to trade restrictions, to domestic-income deflation and unemployment, or to an adjustment in the exchange rate.

Meade II has thus adopted the political equilibrium concept proposed by Nurkse.[3] But Meade II goes on to make another distinction to the effect " that a disequilibrium of this kind may be temporary or may be more or less permanent " (p. 15). Since " it is the latter, of course, which presents the really serious problem " (p. 15), he decides that " perhaps the most basic measure of balance-of-payments disequilibrium is the country's surplus or deficit of potential and continuing payments for autonomous trade and transfers." He resolves that this is what he will mean in the rest of the book (p. 16).

Meade I might now rise and tell Meade II that a theorist is very familiar

[1] Meade assumes " that there is an appreciable volume of unemployment . . . to start with " (*ibid.*, p. 53). This assumption is necessary for an analysis of the " income effects " in a multiplier model.

[2] *Ibid.*, p. 13. For an earlier formulation of the balance-of-payments problem in terms of accommodating capital movements see Fritz Machlup, *International Trade and the National Income Multiplier*, pp. 134–5.

[3] Note, however, that what Nurkse called the " true " balance Meade calls the *potential* balance, to be regarded as the " proper " measure; " true " balance to Meade means *actual* balance, though rearranged for autonomous and accommodating items.

with temporary *equilibrium* but cannot understand what may be meant by permanent or enduring *dis*equilibrium—except perhaps a case of direct controls interfering with " market equilibrium." Indeed, a disequilibrium, in the theorist's model, is a constellation of variables that cannot endure if left alone, that must give rise to further change, and thus is temporary *ex hypothesi*. Meade II would have to reply that he did not mean disequilibrium in the economic theorist's sense, but instead was refering to a situation that was quite unpleasant and unfortunately could last a long time: a situation where a desired level of employment at desired wage-rates could be maintained, at given foreign-exchange rates and without special trade restrictions, only with the help of accommodating capital imports (loans from abroad, forced liquidation of foreign assets and depletion of gold and exchange reserves). If the accommodating finance cannot be secured actual balance will *inevitably* be attained, through less employment, through lower wage-rates, through depreciation of the currency or through stricter trade controls. But since any and all of these equilibrations are " undesirable," Meade II would prefer to deny the attained balance the name and title of " equilibrium."

Return to Value-Neutrality: Meade III

The sentiment and resolution of Meade II were of little avail, inasmuch as Meade III wrote most of the rest of the book. He soon found it expedient to distinguish " internal balance " and " external balance " (pp. 104 ff.), the former dealing with domestic employment (and related matters, such as price inflation and wage-rates), the latter with the balance of payments (and related matters, such as trade controls and foreign-exchange rates). The full-employment standard is no longer an integral part of balance-of-payments equilibrium. For example, cases are discussed where " an inflation of domestic expenditure is needed " both to increase employment " and also to restore equilibrium to the balance of payments " (p. 115). Or, in the discussion of " conflicts between internal and external balance," the distinction of a " disequilibrium " in the balance of payments and, on the other hand, " in each national income " of the countries concerned, is consistently carried through (Chapter X). Indeed, the distinctions are quite fine, especially when Meade III separates hypothetical situations in which " the smallest element of disequilibrium," or " the least-marked element of disequilibrium," can be found either in the internal or in the external balance (p. 122).

Meade III discards also the criteria of immutable exchange rates and absence of trade restrictions from the meaning of external equilibrium. Thus, at one point he considers the possibility that the authorities of the countries " let the exchange rate between their currencies change as a means of regaining external balance without sacrificing internal balance," and the alternative possibility that they impose " direct controls over their

international transactions so as to restore equilibrium to their balances of payments without disturbing their internal balance" (p. 124). And he discusses a case in which "a balance-of-payments disequilibrium is removed by means of the depreciation of the currency of the deficit country," and another case in which "the balance of payments is put into equilibrium" by price adjustments under a system of flexible wage-rates (pp. 328–9). There is little doubt that Meade III had found out that the definitions developed by Meade II, reflecting a commonly shared regret over lapses from socially ideal circumstances, are not efficient tools of economic analysis. Anxious to get on with his work, he left the political equilibrium concept behind (on pp. 13–16) and used an unpolitical one for his economic analysis.

There is still a difference to settle between Meade I and Meade III, but this is not serious. As a matter of fact, it is merely a matter of terminology. Meade I wanted "equilibrium" to be the thinking device, described in this article, while Meade III often wanted it to refer to a balance of payments in which accommodating transactions were zero. If Meade III had spoken of deficit, surplus and zero balances of payments, without using the word "equilibrium," he would have avoided even the appearance of a conceptual difference. But this is perhaps too much to ask. After all, one can get used to words with multiple meanings, and should be able to remember that a so-called "disequilibrium in the balance of payments" means simply a surplus or deficit, which in economic analysis may figure as an initial equilibrium, an adjusting change, or a final equilibrium, depending on the problem at hand.[1]

Attack on Persuasive Definitions: Streeten

Philosophers of science have recently shown that some definitions, supposedly stating what something is or means, are in fact devised to persuade people to do certain things or to do things in a certain way. "Persuasive definitions" is the name characterising such definitions.[2]

Paul Streeten, in an interesting article, showed that certain definitions

[1] A reader who has successfully learnt from Meade I that disequilibrium was just a step in an explanation of change might be puzzled when Meade III tells him about a type of "disequilibrium which is the most intractable" (p. 122). However, this is quickly cleared up when he is reminded that the chapter is supposed to examine alternative financial policies and their effectiveness in restoring balance-of-payments equilibrium without resort to depreciation or trade restrictions. Translated into the terms used by Meade I, the question is whether, starting from an "initial position of equilibrium" with a payments deficit financed by accommodating transfers, any measures of fiscal and monetary policy can be found which will act as a "disturbance" leading to such "repercussions" that a "new equilibrium" with a zero balance of payments will be reached, while foreign-exchange rates are unchanged and trade is not directly controlled. If the final equilibrium in any such model continues to show deficits no matter what "disturbing change" is devised by the financial authorities, then Meade III, with many practitioners in the field, calls the situation an "intractable" balance-of-payments disequilibrium, that is, one not yielding to treatment by financial policy.

[2] *Cf.* C. L. Stevenson, "Persuasive Definitions," *Mind*, Vol. 47 (1938), p. 331; Max Black, "The Definition of Scientific Method," *Science and Civilization* (Madison: University of Wisconsin Press, 1949), p. 69.

of balance-of-payments equilibrium fall in the category of persuasive definitions. We have seen how stable exchange rates, full employment at given wage-rates, stable price levels and unrestricted trade have been included as additional criteria in some definitions of balance-of-payments equilibrium. This expansion of criteria, according to Streeten, amounts to "begging the question"; it "conceals behind a persuasive definition value judgments not generally shared." [1]

Streeten proceeds to exemplify the dangers of persuasive definitions:

> "To include, say, the presence of import restrictions in the definition of 'disequilibrium' produces the convenient result that the removal of these restrictions, and devaluation or deflation, become a *necessity*, although it is hoped, presumably, that the difference between logical necessity (what follows from a definition) and political or moral necessity (what ought to be done) will remain undetected" (p. 87).

It is implicitly assumed, I take it, that those who make use of a persuasive definition of equilibrium rely on the popular association of equilibrium with a Good Thing, and of disequilibrium with a Bad Thing. Thus, they hope to sell to the public the removal of import restrictions (or the adoption of full-employment policies, etc.) in the same package labelled "equilibrium."

This does not mean that the absence of import restrictions or the pursuit of fiscal and monetary policies to create a full-employment demand for goods and services are not important assumptions, perhaps indispensable ones, for the analysis of certain problems.[2] The methodological standing of these two assumptions, however, is not the same if by import restrictions we mean the use of discretionary allocation controls rather than the use of tariffs and other general rules with "predictable" impact. Discretionary controls must be excluded from many analytic models, not because we do not like them, but because we cannot predict the outcome: we would need to know the "behaviour equations" of the control authorities in order to know how they react to certain changes in the variables of the model. As soon as these behaviour functions are "given," linking certain variables to others in a definite way, the controls are no longer "discretionary," and we can work with them in our equilibrium theory.

The assumption of "freedom from discretionary (theoretically unpredictable) controls" is, therefore, a necessary part of a model that includes the concept of a market equilibrium. In such a model we regularly assume

[1] Paul Streeten, "Elasticity Optimism and Pessimism in International Trade," *Economia Internazionale*, Vol. VII (1954), p. 87.

[2] Streeten himself assumes some sort of full-employment policy, not only explicitly, but also when he defines disequilibrium to "mean a permanent tendency to generate a deficit in the balance of payments" (p. 87). It should be clear that such a "tendency" could not persist without a continuing *policy* of offsetting by means of loan expansions the automatic deflationary effects of sales from exchange reserves.

certain relationships between prices, incomes and quantities offered and demanded in the market. If some of the reactions deduced from the assumed relationship become effective only when licensed, and cannot materialise without special permission by an unpredictable authority, the model becomes unworkable. It is only for this reason that " market equilibrium " must postulate effectiveness of " free-market prices," and therefore absence of direct controls. Trade barriers with predictable influence on all adjusting changes are fully consistent with market equilibrium, and with any other equilibrium as well. And, incidentally, the inconsistency of the assumption of discretionary trade restrictions with an analytically workable equilibrium is no good argument against the use of such restrictions in the real world. A policy cannot be rejected merely on the ground that it does not fit into a conceptual scheme which has proved useful in analysis.

The Trouble with Built-in Politics

The objections against persuasive definitions of equilibrium are not based on the fear that gullible people may actually be persuaded to stand up for the measures or policies " deduced " from arguments in which such an equilibrium concept is employed; the real ground for objection is that an equilibrium concept so drastically restricted by built-in political criteria becomes less useful, if not useless, in the analysis of most problems. Most problems that require analysis are such that not all the ideal conditions which are made " honorary criteria " of equilibrium can be " attained "; their analysis calls for a variety of policy variables and institutional (political) behaviour functions combined with a less circumscribed concept of equilibrium that can be used for *any* set of variables and *any* relationships between them. This statement refers chiefly to the kind of analysis in which equilibrium is thought of as the initial and final positions in an imagined process of change involving a chosen set of interrelated variables. But it holds also for an analysis in which equilibrium is thought of merely as the equality of certain (actual or potential) sums on the two sides of the account called " the balance of payments."

Take any change that would create an increase in the demand for foreign exchange, or a decrease in its supply. Whether it is a change in tastes at home or abroad, a change in the technical production possibilities anywhere, a change in fiscal or monetary policy (say, to accelerate economic development), a change in the wage structure (for example, giving higher wage-rates to industrial workers), a change in the flow of investment (perhaps a greater demand for foreign investment), a reduction in the desire to hold cash, or any one of a score of similar " disequilibrating changes "—the adjusting changes will involve first an accommodating outflow of foreign reserve and eventually some of the " prohibited " movements, that is, some deviations from the built-in political requirements of " equilibrium " in the

persuasive sense. For example, real wages may be reduced through higher prices of wage goods; interest rates may rise, or bank loans be curtailed, with consequent reductions in employment; foreign-exchange rates may get adjusted, etc., and the final position—the new equilibrium in the analytical sense—will be a " disequilibrium " of the balance of payment in the persuasive (or rather dissuasive) sense. Since none of the results of any of the possible adjustments would qualify for the honorific title " equilibrium," the " disequilibrium " (in the dissuasive sense) could be remedied only by a *deus ex machina:* by another disequilibrating change that happened to neutralise the first disturbance and render the unpleasant adjustments unnecessary. A virtual sabotage of economic analysis!

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ON PSYCHOLOGICAL TREATMENT FOR THE CLASSICS

THIS book[1] certainly does not make the error of aiming too low. It seeks to clarify the main doctrines of the great economists by applying to their works the methods of psycho-analysis, and also to a lesser extent by a type of interpretation described as "psycho-cultural." The economists who receive most attention are Adam Smith, Ricardo, Marx and Marshall, with side-shots at Malthus. Huge issues are here raised. To economise in space, I therefore propose first to state dogmatically the root criticism this procedure seems to raise. The evidence will next be given in more detail, through examining the specific principles of psycho-analysis to which the classical theories are subjected.

The main issue, then, seems to be whether it is legitimate to apply the methods of psycho-analysis to the *theories* of immortal (as well as mortal) writers. Are a man's writings an adequate basis for psycho-analytic explanations? It might be objected that economic analysis is a highly conscious process, whereas psycho-analysis is concerned with the unconscious. The reply may well be that the intention is to lay bare the unconscious conflicts which determined the course of these conscious arguments. Here the answer seems to be that usually the conflicts in these great writers seem to be perfectly conscious: we can state them in their logical terms, and they usually represent clearly recognised issues in the economic and political conditions which the writings reflect. Alternatively, where this may not be so, no appeal seems to be made in this book to the personal circumstances of the writers, and it is only out of this that material for direct, individual psycho-analysis can arise. We can, of course, have imaginative analysis, as we find it in Proust or Kafka. But economists do not write in this mood of spontaneous artistic creation.[2]

It appears to your reviewer that the purpose of psycho-analysis is to examine men, not writings (except perhaps in a very subsidiary way, as mere and slight corroboration). I should certainly recognise that there is a distinction between clinical psycho-analysis by questions and associations and more imaginative reconstructions from writings. But economic theory, being so intensively and intentionally logical, does not supply a basis for the latter. If so, it is clearly desirable that one should be alive, to be psycho-analysed. The method consists in revealing or recalling to consciousness some remote and not necessarily logical causative event in

[1] *The Psychology of Economics*. By W. A. Weisskopf. (London: Routledge & Kegan Paul Ltd., 1955. Pp. 266. 25*s*.)

[2] I agree with a gifted psychologist, for whose help I am grateful, that "the act of artistic creation takes place in a state of spontaneity when the 'rational' inhibitions are suspended."

the forgotten or repressed past. And it is constantly implied, indeed insisted, especially by Freud, that this (as is fairly obvious) can be achieved only by an almost always long series of interviews between the analyst and the patient, in which the patient is brought to open the flood-gates of his memories, so that some previous shock or conflict which has been repressed, but now causes the anxiety or neurotic state, can be revealed. This process is cumulative. The analyst has first to seize on a hint. On this he must build up his unique explanation by guided question and answer. So a long unique series of individual interviews is of the essence. I should add that, certainly for Freudians, repression usually occurs in the early years; it is mainly infantile, and it occurs in the " pre-conscious." [1]

Now, it would no doubt be a fascinating and richly rewarding experience thus to psycho-analyse Adam Smith, Ricardo, Marx and Marshall. The latter two would indeed be " all-time highs." But the point is that it just cannot be done. Of course, there are facts in the lives of all of them that might suggest the lines on which an analyst would seek to discover the specific incidents whose revelation constitutes psycho-analysis. For instance, Adam Smith's father died before his birth; Ricardo and Marx were Jews, and the former certainly, the latter probably had some trouble with their fathers over this; or Marshall had similar disagreements, for instance as to his career. But none of them abides our question—and without specific question and answer we cannot have psycho-analysis. Also, in fact, this personal stuff is not the kind of material our author uses. He deals with their theories. But, as such, theories are not individual experiences. They are generalised propositions. It may well be that there are hidden conflicts in all writers. But to deduce these conflicts from their writings is to reverse the proper order. By impartial clinical examinations, we might reveal such conflicts, if they existed, and they might well explain the theories. But we cannot infer the actual hidden conflicts from logical contradictions in the theories.

Space permits only brief reference to the main types of psychological conflict which these classical writings are alleged to reflect. I shall touch only on the theory of the unconscious, the Œdipus complex, ambivalence, group psychology and what our author calls " psycho-cultural " conflicts.

First, then, the field for psycho-analysis is essentially the unconscious. This region is in itself not available to the unguided, untrained introspection of the individual, though it is capable of being raised to the " pre-conscious " and then to the fully conscious level by the patient questioning of the analyst (Freud, *Outline of Psycho-analysis*, pp. 19, 20, 37). " The teachings of psycho-analysis [to quote the Introductory Note to the *Outline*] are based upon an incalculable number of observations and experiences, and no one who has not repeated those observations upon himself or upon others is in a position to arrive at an independent judgment of it." It is, then, in the un-

[1] Cf. P. Mullahy, *Œdipus*, p. 16.

conscious that these unresolved conflicts develop, unresolved simply because, unaided, the conscious cannot get at them. So it is in the unconscious, or preconscious, that " repression " takes place; for such conflicts as love with hate for a parent cannot be allowed free expression in a normal life.[1] I emphasise this seat of repressions in the unconscious, because the fact at once throws a large doubt on the method of this book. The writings of economists deserve many epithets—but hardly that of " unconscious." Of course there will be hidden urges which contribute the psychic energy required (*inter alia*) to produce the writings; and among these " drives " a conflict might take its place. But such a conflict would be in the unconscious. It would therefore have to take a quite specific individual form based on incidents in early life; for certainly in the main such conflicts develop in the infantile stage. Such incidents can be exposed by psycho-analysis. But of such personal psycho-analytic evidence there is practically no trace in this book. The evidence examined is the writings. I should not, of course, deny that some personal evidence might be collected. But you cannot psycho-analyse the dead. The best one could do would be to collect biographical evidence, perhaps from letters. But even so, the analytic deductions could be only rather flimsy hypotheses. One could at best get hints, hints from now dead material, dead because it cannot answer the cumulatively developing questions of a psycho-analyst. Such evidence is in sum quite fragmentary, quite irresponsive.

Within the unconscious, the types of conflicts that arise are mainly those connected with erotic experience in the infantile stage—especially for Freudians the Œedipus complex.[2] This, in its most usual form, is the libidinal fixation (" Cathexis " or charged emotion) of the son on the mother, involving rivalry with the father, or vice versa for the daughter. Anxiety about this causes repression. Now if this were the whole story it might be helpful, in a *very* broad way, to trace the influence of the Œdipus complex on the great economists. But it is not so simple. As our author says (p. 155): " The latter [the fixation we have just sketched] is the typical attitude of the revolutionary son. But the neo-Freudian interpretation of this complex stresses less the sexual aspect, and more the revolt of the new generation against the authority of the father or the father substitute." [3] The primary fact here is not the son's love of the mother, but the rebellion against the father. This reinterpretation our author then ingeniously uses to explain a difficulty as to the theories of Ricardo and Malthus on the one side and Marx on the other. It is, in his words, the fact that " although [Ricardo] harboured some unconscious hostility towards the economic

[1] E. Fromm points out that " good " as well as " evil " drives can be repressed, cf. *The Fear of Freedom*, pp. 8, 177, 210.

[2] Freud, *New Introductory Lectures*, p. 113 *et passim*. Later Freudians have altered the basis of the complex. It is usually less sexual, more authoritative, than with Freud. But the importance of parent–child relations is generally accepted.

[3] Cf. E. Fromm, *The Forgotten Language*, as quoted at p. 155 of the book under review.

system, he defended it, whereas Marx attacked it openly." The ingenious explanation is then given:

> "In the value theory of the advocates [of the economic system], the male element, that is labour, represents the father. In their attempts to protect and explain [the father's] authority, they had to depreciate the female and motherly elements as of secondary importance. Their pro-masculine and anti-feminine attitude meant pro-father, pro-authority, and therefore anti-mother, anti-feminine. In the thought of Marxians, the male element, labour, means the son; they are pro-female because they are anti-father." [1]

What are we to say about all this? It is an ingenious, stimulating hypothesis. But let us underline the "hypothesis." You cannot prove it, or begin to prove it, by psycho-analytic methods. But then by ordinary methods all kinds of doubts and counter-arguments arise. The "pro-female" Marx, for instance, was all for manufacture, as against Mother Earth. Or again, what is the broad attitude of female economists here? One does not notice any signs of clear division in the writings of male and female economists. In sum, a candidly amusing reference by Freud to a critic seems here in point.[2] Referring to his own comment on Darwin's "horde" theory of primitive society, Freud remarks: "To be sure, this is only a hypothesis, like so many others with which archæologists endeavour to lighten the darkness of pre-historic times—a 'Just-So Story,' as it was amusingly called by a not-unkind critic [Kroeger]." Are not our author's analogies rather like just-so stories? For conflicting aspects between Marx and Ricardo he finds suitable psycho-analytic varieties. He takes them from psycho-analytic texts—but where might this not lead us? The varieties of Œdipus complex are so numerous that one will suit any case. It is "every shy a coconut." Freud, very properly goes on: "I think it is creditable to such a hypothesis [the just-so story] if it proves able to bring coherence and understanding into more and more new regions." But the *order* must be right. Our author proceeds from the economic theories to their possible unconscious basis; the psycho-analytic process is the reverse. And here it cannot operate. For you cannot psycho-analyse the protagonists. As an initial stimulus to theory, a psychological hypothesis may have some place. But, beyond that, one is reminded of Professor E. H. Carr's remark: "A little Freud and a lot of ingenuity will prove almost anything." [3]

A further psychological formula properly examined by our author is that of the ambivalence of emotions, "that is to say the coincidence of love and hate towards the same object, at the root of important cultural formations." [4] Once again, the ambivalence Freud analyses takes place in the

[1] *Loc. cit.*, p. 155.
[2] *Group Psychology*, p. 90.
[3] *Karl Marx*, p. 305.
[4] Freud, *Totem and Taboo*, p. 239.

unconscious, as an unresolved subconscious conflict. Now, examples of ambivalence given by our author are such as the following. Adam Smith showed ambivalence between utility and labour "as a basis of value" (p. 29). Most commentators have, of course, insisted that there is an unresolved issue here. But it is also a dominantly conscious issue, pursued through logical arguments on both sides, one which the thought of some two hundred years has not yet entirely resolved. One might reply—true, but there are unconscious conflicts behind this. Well then, if one were to sum together all the similar ragged edges left by Adam Smith, the picture of all these unconscious conflicts within one breast would surely contradict that of the peculiarly equable and stable psyche which Adam Smith presented. His was an unusually integrated personality, one unusually tolerant of "ambivalences." (Is this due to the absence of his father, and his ideal relations with his mother? We have only the bare facts as evidence.) It was indeed his special genius and value to define all the possible theories and not to concern himself excessively about the logical clashes they evinced at the margins. The same eclecticism appears in his moral theory. All creeds are described. His own reconciliation of them he does not easily reveal. This kind of genius is not at present popular. We are all strict analysts to-day. But it is precious, just because it is so rare. And this it is that made him such a fruitful sire for a new science, a rich catalyst for all kinds of future writers. I suggest that any psychological evidence we have does not support the view that he had ambivalent emotional disturbances of this nature.

Space allows of only one further example. We are told (p. 214) that:

> "What Marshall asserts in one breath he takes back in the next. First, he makes the establishment of the equilibrium position dependent on the passage of time; then he postulates that during that period of adjustment nothing should change; otherwise, the position could not be established. This is meaningful only from the point of view of 'psycho-logic': as an expression of an ambivalent attitude towards (inner and outer) changes and towards the concept of equilibrium."

Dr. Weisskopf fairly quotes what seems to me a convincing answer. It is the famous passage: [1]

> "The element of time is a chief cause of those difficulties in economic investigations which make it necessary for man with his limited powers to go step by step; breaking up a complex question. . . . In breaking it up, he segregates those disturbing causes, whose wanderings happen to be inconvenient, for the time, in a pound called Cæteris Paribus."

And he adds what also seems to me a very fair reply of his own as to the suitability of this method in the human and physical sciences: "In the (physical universe) the elimination of factors often leaves the remaining ones

[1] Marshall, *Principles*, p. 366.

unaltered. In the (human universe) the separation of one of them alters the whole and changes it into something entirely different." [1] But would not Marshall have agreed with this entirely rational criticism? After all, the human intellect is a feeble imperfect weapon. He would have supported his "cæteris paribus" method on the sound grounds that it is *one* essential mode of scientific approach. When Dr. Weisskopf remarks "a different type of model building has to take place here" (for "long-run development") I suggest Marshall was entirely conscious of this. He continually stressed the obscurity and importance of the organic and of his "activities." Every thinker is faced with this "conflict," but this because it springs from the nature of the human intellect. We analyse because we must. And we know, or should know, its limitations. They exist in the structure of our minds. If we are looking for ambivalence, should we not rather seek *emotional* conflicts, such, for instance, as might plausibly be expected to arise from the Jewish origins of Marx and Ricardo, or of love and hate for a father?

Some reference is also made to the psychological foundations of society, and the passage from the individual to the social. Here again Marshall comes in for criticism, specifically of his Law of Large Numbers as the link. The criticism is admirably summarised in the statement, "Individual differences will cancel out in large numbers only if random factors prevail" (p. 191). Once again, I feel that Marshall would have agreed; but the issue seems to be the same one of method. Is there any need to say the law of large numbers "fulfils a psycho-cultural function"? For:

> "An entire series of beliefs and conflicts is involved: (*a*) the conflict between the ideal of rational economic conduct and the irrational impulses of the individual; (*b*) the assumption that only rational behaviour is regular and subject to uniform laws, whereas irrational behaviour is not; (*c*) the tendency to interpret group behaviour according to the pattern of individual rational action" (p. 191).

Does the use of this method reflect an unconscious psychological conflict? Can rational science indeed get anywhere if it neglects the method, though there may be others it uses too little? Of course, criticism is easy. Can we suggest any other lines on which group psychology might be used? In truth, the classic psycho-analysts have not very much to say about group psychology. In Freud we find stimulating remarks such as: "demand for equality is the root of social conscience" and "the demand for equality in a group applies only to its members and not to the leader. All the members must be equal to one another, but they all want to be ruled by one person" (*Group Psychology*, pp. 88, 91). These link up with his hypothesis of the rebellion of the brothers against the father, and their subsequent need of a leader. These ideas are mentioned only to illustrate the type of

[1] P. 214.

theory (relating to a remote " fall ") that is held by psycho-analysts. No evidence of this type is adduced by the book under review.

There is, however, constant reference to a formula called " psycho-cultural necessity." Here I am in this difficulty. There does not seem anywhere to be an explicit definition of what the author means by this formula. The eighteen references in the index have been specially searched for such an explanation; but in no case is the formula extended. Certainly one can imagine such a basis for analysis. (Freud's theory of the super-ego in *Group Psychology* might have offered a start, and Erich Fromm's historico-cultural analyses [1] are in point). Cultures might be analysed as they were by Marx, substituting psychological for his economic determinism. What our author gives us, however, is broad historico-economic interpretations of the classical economic texts he refers to. There is a constant tendency then to tack psychological labels on to these interpretations under the broad rubric " psycho-cultural." (Consider, for instance, the references at pp. 23, 27, 29, 31, 38.) One is therefore apt to feel that the psychological factor is dragged in at the tail-end of a perfectly reasonable exposition of an unsolved issue in economic theory. The " labour embodied " " labour commanded " issue in the *Wealth of Nations* is mentioned; it is part of the conflict between use and labour or even exchange theories of value. None of these is yet resolved, and each is capable of argument in strictly rational terms. It is suggested that the issue is " psycho-cultural " in that in Smith's day modern types of production relying largely on capital had not then developed. This seems doubtful. The Glasgow of 1750–70 showed many analogies to the large capitalistic business and hired labour of modern economies. It was in these terms that Smith, Ricardo and Marx mainly thought.

Similarly, we have the attitude of Ricardo and Malthus to the land with its diminishing returns, described as " the source of all economic ills, the evil principle in their universe of discourse " (p. 125). Again " land plays the role of the devil in the Ricardian system " (p. 77). Now, did it? Surely it was not the scarcity of fertile land that was " to blame." Certainly we can transfer " blame " irrationally in the unconscious to physical forces; but we do so only if we have no clear *rational* force to blame. But here we have. Surely it was " the tendency of population to super-abound "—in James Mills' phrase—that the classical writers consistently blamed; and justifiably so, because you ***can*** blame people for this. Our author, commenting on Malthus, does mention: " the unfortunate quality of fecundity is definitely characterised as an attribute of the female, as distinguished from the sexual passion. The male, who, after all, participates in the latter, is in this way exonerated from the blame of causing over population " (p. 126). Even in spite of Bernard Shaw, and Kipling's " the female of the species is more deadly than the male," mere males may

[1] Especially in E. Fromm, *The Flight from Freedom.*

well feel they are here not bearing their true share of responsibility. But the psychological interpretation requires that " land is unconsciously identified with the female, the tendency to disparage land implies an unconscious tendency to disparage the female " (p. 126). So to this tune the interpretation must dance. Yet Malthus is usually held to favour the land interest against Ricardo. Or again, how explain the Physiocratic land as the source of all wealth? Dr. Weisskopf then goes on to offer " psycho-cultural reasons for such a tendency in the socio-economic and cultural situation of the nineteenth century " (p. 127). It is, of course, agreed that there is much evidence of " praise " as well as " blame " in the huge mythology as to Mother Earth (Chapter XI). (The trouble is that there is far too much evidence—the myths can point almost any way.) What I do doubt is whether we need to assume that in their economic theories Ricardo and Malthus were influenced explicitly by unconscious psychological forces. Do we gain anything by such obscure guesses when there is a perfectly adequate logical explanation? This plain explanation for them was that population did tend to " superabound." Their thinking does not seem to have been influenced by emotions about either the " niggardly " land or female fecundity. The crucial population trend is consistently stressed by all the writers of this era. This issue is always with us in some form. Why this is so we understand. It is a rational issue. And it is not to rational, but to irrational hidden conflicts that we should apply psychological techniques.

A similar comment arises as to the mainly " psycholo-cultural " interpretation of Marshall. His conflict is between an—

> " activist work ethic with a new emphasis on the subjective elements of enjoyment and consumption. To save his Puritan conscience, he hurries to state that, after all, activities and efforts are the creators of events and, therefore, are more important than events, and in the end he feels forced to take back his declaration that wants are ends in themselves " (p. 174).

This in turn is linked with the Victorian cultural background (p. 170)—the psycho-cultural unity of " business ethics and Christian morals," and many quotations are offered as to Marshall's " ambivalence " here (Chapter XVI *passim*). This, of course, is highly interesting (it has been fully developed in Talcott Parsons' excellent study). But it is essentially background. We are straining analysis when we suggest that Marshall's description of " a dish of green peas in March " as a " superfluous luxury " (tho' a " wholesome food ") is " very much reminiscent of the behaviour of obsessional neurotics " (p. 183). Reading the whole passage, is the argument not rather an example of exact scientific analysis than of " hyper-meticulous, compulsive calculations "? After all, Marshall is writing economic theory. Here, the law of non-contradiction is the proper guide (with a merely

sufficient reference to refractory facts). So the orthodox view seems perfectly sufficient. The *Principles* was an " introductory volume," in which Marshall properly worked out the static theory. Any economist accepts the fact that this is only analytic theory. It properly abstracts from change. Marshall meant to deal with change in a later volume. He fully realises in the *Principles* that the static theory cannot entirely cope with such dynamic factors as increasing returns and changes in taste. But, for his purposes here, the Utilitarian assumptions are perfectly suitable. He was quite clear about his " activities " line of thought. Similarly, when it is argued (p. 200) that Marshall's attachment to equilibrium theory and perfect knowledge serves to silence " the doubts about our self-knowledge," I prefer the straightforward reason that this is the inevitable logical method of science, especially of mathematical scientists (who are not specially afflicted with " doubts ").

This review has confined itself to its subject's central theme. It would be fascinating if we could psycho-analyse great writers. But even if we could spot the living winners, this would involve prolonged treatment; and it might cause them to cease to be great, which would deprive us of the benefits of the work that they might otherwise have done after the date of the treatment. Prolonged treatment is needed because results are obtained only by patiently following up any hints the analyst manages to evoke. For this reason, even a thorough collection of biographical evidence, through letters and monographs, is no substitute. For letters and biographies cannot answer a guided sequence of questions by an analyst. Similarly, " psycho-cultural " interpretation can be invaluable as a background. But they remain speculative, and even so, they have to be worked out by detailed impartial descriptions of psychological facts. As suggesting such approaches, the present book, while it does not make much progress, is a valuable stimulant. It is also excellent in a more incidental way. The straight economic criticisms of the classic economic doctrine are generally admirable, especially when not confused by the pressures of psychological theories. This is especially true as to Ricardo and Marshall (I do not feel the same success with Adam Smith). One could pick out his expositions of Ricardo's attitude to the " labour bestowed, labour commanded " issue, or to his " absolute value," or of Marshall's use of the law of large numbers, or of the representative firm to reconcile increasing and diminishing returns, as worthy models of straight constructive criticism.

On the main issue, however, the psychological contentions of the argument, your reviewer must record his own opinion that the verdict must be " not proven."

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THE ECONOMIC FRAMEWORK OF A THEORY OF GROWTH

I

THE purpose of this paper is to present a simple theory of economic growth that is sufficiently general to be useful in studying the growth problems of both developed and underdeveloped economies. The theory is purely economic in the sense that it ignores the manifold variations in cultural and institutional factors that are a very important part of the explanation of differences in levels of development and in rates of growth throughout the world. The basic determinants of growth are herein conceived to be population increase, saving and technological progress; and the theory that is set forth is essentially an explanation of the interrelationships among these basic elements and their effects on the growth of output of goods and services.

The theory is not new in any fundamental sense. It is rather a blend of the "heroic dynamics" of the classical school, the neo-classical marginal productivity theory and Keynesian employment theory. Thus the analysis lies within the main-stream of orthodox economics. For this reason it is undoubtedly more useful as it stands—that is, without amplification or qualification to take into account "non-economic" factors—when it is applied to the developed economies for which the orthodox economic theory was devised. Accordingly, in this paper the theory will be set forth within the context of the growth problems of a developed economy. Nevertheless, the writer believes that the theory has more general validity. While the purely economic model cannot stand alone, it is nonetheless an essential part of any general theory of growth.

II. A SIMPLE MODEL OF A GROWING ECONOMY

In order to provide a general framework within which the various parts of our theory may be fitted, we present in this section a simple model of a growing economy.[1] In the interest of brevity we consider a closed, private economy with only two factors of production, labour and capital. We can ignore natural resources if we assume a rate of resource-saving improvement in knowledge that leaves unaffected the marginal productivities of capital and labour as their supplies grow in fixed proportion. We define this situation as one involving *no* technological progress. Furthermore, a positive rate of technological progress is construed to include not only all improvements in knowledge beyond that required to prevent diminishing returns from the fixed supply of natural resources, but also any possible tendencies toward increasing returns as supplies of capital and labour grow in fixed

[1] An earlier version of this model was presented in the writer's "Capital Intensity and Economic Growth," *The American Economic Review*, XLV (May 1955), pp. 197–207.

proportion. This enables us to employ the assumption of constant returns to scale, which in turn insures diminishing marginal productivity both of capital and of labour in the absence of technological progress. Finally, if we choose to relax the assumption concerning the rate of resource-saving improvement in knowledge we can treat diminishing returns from fixed natural resources as negative technological progress.

There are two conditions for full-employment equilibrium growth. First, all increments to what we shall call the "free labour supply" must be equipped at the ratio of capital to labour that is optimum (*i.e.*, most profitable) given knowledge, real wage rates and interest rates. When this occurs we will say that capital widening [1] is proceeding at the natural rate [2]—that is, at the rate that just matches the growth of the free labour supply. Increments to the latter include not only the natural increase of the labour force from population growth, but also those technologically unemployed by labour-saving innovation. Over the past seventy-five years the ratio of capital to labour in the United States, for example, has risen at a rate of about 1¼% per year.[3] Thus each year the same capital stock (in slightly altered form) has required on the average about 1¼% fewer workers—the latter, along with the growth from population increase, requiring *net* capital formation.

Let us assume for the sake of example that a labour force of 65 million workers is growing at a rate of 1½% per year and that the annual rate of labour-saving is also 1½%. Let us assume further that existing techniques, as determined by technical knowledge and factor prices, imply an average equipment per worker valued in current prices at $18,000; and that growth occurs evenly throughout the economy so that increments to the free labour supply are equipped at the average capital–labour ratio. The natural rate of capital widening would mean, then, equipping annually 1·95 million workers with an average of $18,000 worth of capital per worker—or net investment of $35·1 billion per year.

The second requirement for full-employment equilibrium growth is that net capital formation thus required by the growth of the free labour supply equals net saving at full employment—or, in other words, that aggregate demand equals full-employment aggregate supply. The latter is equal to the labour force multiplied by average labour productivity (keeping in mind that output and consequently labour productivity are calculated net of deprecia-

[1] The term "capital widening" is borrowed from Hawtrey. The definition of capital widening employed here differs from that of Hawtrey, however, in that it means capital formation at a given ratio of capital to labour, rather than at a given ratio of capital to output. Cf. R. G. Hawtrey, *Capital and Employment* (London: Longmans, Green and Co., 1937), p. 36.

[2] In "Capital Intensity and Economic Growth" (*op. cit.*, p. 199) the writer termed this the "warranted" rate of capital widening; but since the concept is closer in spirit to Mr. Harrod's natural rate of growth than to his warranted rate, the terminology has been altered here to avoid confusion. Cf. R. F. Harrod, "An Essay in Dynamic Theory," ECONOMIC JOURNAL, XLIX (March 1939), p. 30.

[3] Moses Abramovitz, "Resource and Output Trends in the United States Since 1870," *The American Economic Review*, XLVI (May 1956), p. 8.

tion). Let us assume, again for the sake of example, that our 65 million workers have an average productivity of $6,000, implying a full-employment net national product of $390 billion. If 9% of this net national product were saved, net saving would match net investment at $35·1 billion, and the second requirement for full-employment equilibrium growth would be met.

We can put these conditions in the form of a simple equation

$$g \,.\, c = s \,.\, p \qquad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

where g is the annual percentage increment to the free labour supply, c is the optimum capital–labour ratio, s is the ratio of net saving to net national product at full employment and p is average labour productivity (net of depreciation).

The first condition requires that the operation on the left-hand side of equation (1) be carried out so that net investment is at the natural rate. The second condition is then represented by the equation itself. Inserting our assumed values we get

$$3/100 \,.\, \$18{,}000 = 9/100 \,.\, \$6{,}000$$

yielding net saving and investment for the current year of $540 per worker, or $35·1 billion for a labour force of 65 millions. Full-employment equilibrium growth requires that the two conditions hold continuously over time as the labour force, capital stock and rate of output grow.

The natural rate of capital widening is discussed more fully in Section IV; but one point must be stressed here. While variations in the rate of capital widening and variations in the capital–labour ratio each alter the level of investment, and therefore the level of aggregate demand, it is not a matter of indifference which occurs in a particular instance. If, for example, in a situation where equation (1) holds, but where the actual rate of capital widening falls below the natural rate, resulting in a deficiency of investment and aggregate demand, a rise in the capital–labour ratio would *not* be the appropriate solution. For this would mean adopting production techniques which raise the ratio at which *only a part* of each increment to the free labour supply is equipped with capital. Despite an equality of aggregate demand and aggregate supply, there would be a growing excess supply of labour.

Likewise, a variation in capital widening cannot serve as a substitute for an appropriate adjustment in the capital–labour ratio. If the ratio of capital to labour were too low for equilibrium growth, given g, s and p, a rise in capital widening above the natural rate would soon result in a shortage of labour relative to capital equipment that could be cured only by an appropriate adjustment in the capital–labour ratio itself. Thus a necessary condition for full-employment equilibrium growth in addition to the saving–investment equality is that capital widening be at the natural rate.

This is the starting point for our analysis; but before we proceed we must clear up some difficulties. First, note that net capital formation is conceived to be a process of equipping increments to the free labour supply

at some ratio of capital to labour. What of the process of re-equipping the existing labour force when new techniques render old equipment obsolete? It will simplify our discussion considerably if we assume that such re-equipment of the existing labour force proceeds throughout the economy as old equipment is completely amortised in the accounts of business. Thus we ignore any discrepancies between amortisation and replacement, treating all of net investment as capital widening (in our sense of that term) and assuming that capital intensification takes place through replacement investment, though this simplification can easily be abandoned.

The process of re-equipping the labour force when innovations in techniques occur may, however, free some labour from participation in production with the existing stock of capital[1] (labour-saving innovations); in which case net investment is required to equip this increment of freed labour if it is to be employed. Alternatively, the process of re-equipping the labour force may require additional labour to staff the existing stock of capital (capital-saving innovations); in which case some of the increment to the labour force from population growth must be so utilised, leaving less to be equipped by net capital formation.[2]

Thus the natural rate of capital widening depends not only on the rate of population growth (assuming the percentage of the population that participates in the labour force to be constant), but also on the direction and rate of innovations in techniques. The direction and rate of innovation is shown by the movement of c, the optimum capital–labour ratio. A rise in this ratio implies labour-saving innovation, while a fall implies labour-using, or capital-saving innovation. The value of g depends then on the rate at which c is rising (or falling), as well as on the rate of population growth. It is because g includes labour freed by labour-saving innovation in addition to actual increments to the labour force that we refer to it somewhat ambiguously as the rate of growth of the free labour supply.

What determines the direction and the rate of innovations—*i.e.*, the movement of the optimum capital–labour ratio? We assume in accordance with elementary marginal productivity theory that c may rise as a result of a rise in real wage-rates or fall in interest rates and that c may fall in the opposite cases.[3] In addition, of course, c varies with the direction of tech-

[1] That is, the existing stock of capital in its changed form.

[2] Labour-saving and capital-saving refer to changes in the capital–labour ratio; not, as is sometimes the case, to changes in the labour–output and capital–output ratios.

[3] The influence of factor prices on capital intensity depends significantly on the competitive nature of product and factor markets. While the writer is by no means satisfied with his discussion of these relationships in his "Capital Intensity and Economic Growth" (*op. cit.*, pp. 201–5), the conclusion reached there was that changes in either interest rates or real wage-rates could alter optimum capital intensity. The definition of real wage-rates is very important in this connection, however. The definition employed here is the ratio of wage-rates to prices in general; not the ratio of wage-rates to consumers' goods prices only. We assume, that is, that when money wage-rates change they are altered for producers of equipment and producers of consumers' goods alike. And the prices of equipment are no more likely to move proportionately to wage-rates than are the prices of consumers' goods.

nological progress. Improvements in knowledge may be labour-saving, capital-saving or neutral, depending on whether they raise, lower or leave unchanged the optimum capital–labour ratio with given real wage-rates and interest rates.

c may vary, then, as a result of market forces—market-induced innovations; or as a result of improvements in knowledge—invention-induced innovations. The higher is c, the greater is the investment required by a given rate of growth of the free labour supply (g). In addition, however, the faster is c rising, the higher is the level of g.

Next we come to the very important relationship between c and p. The greater is capital per man, the greater is labour productivity. Thus while a rise in c raises the natural rate of investment and aggregate demand, it also raises aggregate supply. In the absence of improvements in knowledge the increase in supply will be less than in proportion to the increase in demand, since an increase of a given percentage in only one of the two factors of production will raise output by a smaller percentage under our assumption of constant returns to scale. On the other hand, invention-induced labour-saving innovation may well raise aggregate supply more than aggregate demand (though it need not). We shall see subsequently that a proper balance between market-induced and invention-induced labour-saving innovation is of some importance to equilibrium growth in a developed economy.

Aside from the influence of innovations, we assume that p depends on the length of the work week, since labour productivity in the model refers to output per man, not to output per man-hour.

Finally, we consider the relationship between c, the ratio of capital to labour, at which increments to the free labour supply are equipped, and the average capital–labour ratio for the economy. A changing composition of employment could alter c even in the absence of technological progress or changes in relative prices. And, depending on whether the more or less capital-intensive sectors exhibited the faster rate of growth of employment, c would be above or below the average ratio for the economy. If, however, expansion occurs at a uniform rate throughout the economy the discrepancy between the two ratios would be slight, being due only to the lag in adjusting the capital stock to the new techniques. For simplicity, then, we shall assume that discrepancies between the ratios are due solely to changes in the composition of employment. The importance of this relation is discussed in Section VI.

III. Two Kinds of Disequilibrium

We can distinguish two general categories of disequilibrium in growing economies. The first, which we shall label the *deficient supply case*, is typical of underdeveloped economies—*i.e.*, economies with low labour productivity (p) and a low ratio of saving to output (s) relative to the rate of population

growth (g) and the optimum capital–labour ratio (c). Capital widening at the natural rate generates an aggregate demand for goods and services in excess of full employment supply. Only if saving can be "forced" through inflation beyond its normal ratio to output can capital widening actually proceed at this rate. More likely, owing to a shortage of money capital (perhaps induced by anti-inflationary monetary-fiscal policy), capital widening falls short of the natural rate, and a part of each increment to the free labour supply remains unemployed. It is possible, of course, that instead of remaining unemployed the latter finds occupation in agriculture or in self-employment in the service industries, where it is not required that labour earn the market wage. This "disguised unemployment" is as symptomatic of disequilibrium growth as is explicit unemployment, however.

Thus we have the example familiar to students of underdeveloped countries of persistent unemployment that is not amenable to Keynesian remedies. Any attempt to raise aggregate demand through monetary-fiscal policy would simply be inflationary. What is required for equilibrium growth is a reduction in $g \cdot c$ or a rise in $s \cdot p$.

The *deficient demand case*, on the other hand, is typical of developed economies—*i.e.*, economies where the values for p and s are high relative to those for g and c. Capital widening at the rate required by the growth of the free labour supply together with the saving function creates an aggregate demand less than aggregate supply, resulting in unemployment of *both* capital and labour. The redundancy of capital causes capital widening to fall below the natural rate, inducing the familiar cumulative downward movement of the business cycle. This is the well-known Keynesian case and, as was indicated above, we will be concerned exclusively with this case in developing our theory of growth in the subsequent sections of this paper.

IV. Growth and Cycles

Assume that initially capital widening is proceeding at the natural rate. If $g \cdot c$ falls short of $s \cdot p$, however, this natural rate is not sufficient to generate aggregate demand equal to aggregate supply. The deficiency of demand gives rise to unemployed labour and capital, a decline of the rate of capital widening below the natural rate (because of the redundancy of capital), and a cumulative downward movement in output. There is no dearth of explanations in business-cycle theory for the termination of the downward phase, and we are not concerned here to choose among them. It is sufficient for our purposes to assume that for some reason or other the upward phase is initiated. Then the pool of unemployed labour enables capital widening to proceed in the upswing at a rate in excess of the natural one. At full employment, however, the rate must fall again to that governed by the

growth of the free labour supply, and we have at this point a Hicksian "constrained peak" [1] to be followed inevitably by another downturn.

We cannot be certain, of course, that each cyclical upswing will develop sufficient momentum to carry the economy to full employment. Over a long period, however, covering several business cycles, there would seem to be a tendency for capital widening to approximate the natural rate. At least we can say that the rate of capital widening cannot in the long run exceed the rate of growth of the free labour supply. And if from time to time the cumulative forces in the boom phase of the business cycle are sufficiently strong to maintain the excessive rate of capital widening until it is ultimately constrained by the limit of the available labour force, we will experience periodically a situation of full employment of both capital and labour. If, however, the additional requirement for equilibrium growth—that investment, as given by $g \cdot c$, be sufficient to match saving, as given by $s \cdot p$—is not fulfilled, these periods of full employment will be ephemeral, since capital widening even at the natural rate does not generate an aggregate demand equal to aggregate supply.

A long-run growth path just touching the peaks of "constrained cycles" would indicate a growth of output appropriate to capital widening proceeding at the natural rate, but at a capital intensity too low (given g, s, and p) to maintain aggregate demand equal to aggregate supply. The actual growth path would, of course, be a cyclical one falling below this "trend." The growth path that could be achieved with a capital–labour ratio high enough to fulfil the equilibrium condition described by equation (1) would rise more steeply, since more capital would be added with each increment to the labour supply. Alternatively, equilibrium growth could be achieved with a reduced s; but this would mean a less rapid rate of growth of output —*i.e.*, a lower full-employment equilibrium growth path.

The various growth paths are illustrated in Fig. 1. Given s, g and p, and a capital–labour ratio that is sufficiently high to equate aggregate supply with aggregate demand, output will grow along path A. If investment is not sufficiently capital intensive, output will grow along a path such as C, with at least some of the cyclical peaks representing full employment. But even the full-employment peaks are on a growth path, B, below the potential A path. B falls below A simply because the same growth in labour supply is accompanied by a slower growth of the capital stock. A reduction of s to the level required by equation (1) (given g, c and p) would place the economy on growth path B; that is, it would eliminate the cycles without raising the long-run path of growth.

Implicit in the above analysis of the relation between growth and cycles are two ideas that are fundamental to the argument: first, that booms develop sufficient momentum to carry them to a ceiling and not beyond;

[1] J. R. Hicks, *A Contribution to the Theory of the Trade Cycle* (London: Oxford University Press, 1950), pp. 92, 95–8.

and, second, that the relevant ceiling is the limit of the available labour force. Professor Hicks' theory of the business cycle [1] fits very well into this picture, but other explanations are possible. It is sufficient perhaps for our purposes to point out that there does not appear to have been an accumulation of unemployment from one cycle to the next in the experience of advanced countries like the United States (with the notable exception of the 1930s). And while the explanation for the existence of this phenomenon in the past warrants more attention than has been accorded it, for the present and future we need merely point to the contracyclical policies of governments in advanced countries for justification of an assumption that capital widening

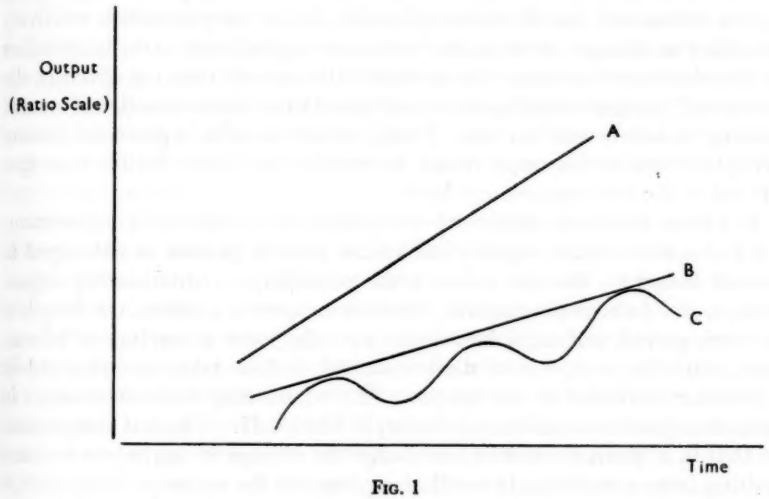

FIG. 1

proceeds in the long run at the rate governed by the growth of the free labour supply. For every effort is made to facilitate through monetary and fiscal policies the continuation of the boom to full employment of the labour supply at which point the brakes are applied. Thus, whereas the real underlying scarcity may be the supply of labour and the surplus, the supply of saving, halting the boom at full employment insures that the scarcity of labour never becomes explicit; and the subsequent depression insures that the potential surplus of saving likewise is never realised.

V. EQUILIBRATING ADJUSTMENTS

At this point we should consider the possibility that there will occur automatically equilibrating adjustments in g, c, s or p whenever disequilibrium is present. In the classical theory of economic growth the saving

[1] J. R. Hicks, *A Contribution to the Theory of the Trade Cycle* (London: Oxford University Press, 1950), pp. 92, 95–8.

function and the rate of growth of population were assumed to adjust to each other so as to maintain automatically a balanced relation between capital stock and labour supply. Diminishing returns due to the absence of resource-saving innovation at the required rate insured that profits would fall steadily over time; but reduced profits led to reduced saving and investment, lowering the demand for labour, its rate of remuneration and consequently the rate of growth of population. The end result was a stationary state, but during the growth process movements of wage-rates and profits insured full-employment equilibrium growth.

The classical theory thus lies within the broad framework of our growth model. It is more realistic, however, to assume that population growth is a given datum and that the full-employment saving-output ratio is relatively insensitive to changes in the rate of return on capital *except* as the latter affect the distribution of income. More specifically we will take s as given in the absence of changes in fiscal policy or in the relative shares of national income accruing to labour and capital. Finally, while we take as given the ratio of saving to output at full employment, we permit the ratio to decline as output falls below the full employment level.

We have therefore eliminated the possibility of automatic adjustments of g and s to maintain equilibrium in the growth process as envisaged in classical theory.[1] We also rule out the possibility of equilibrating adjustments in p. Labour productivity depends on human abilities, the length of the work period, technical knowledge and the ratio of capital to labour. These, with the exception of the last-named, will be taken as independent of the other variables in our system. The relationship between changes in p and changes in c was discussed earlier, in Section II. There it was pointed out that in a given context of knowledge the change in aggregate demand resulting from a variation in c will always exceed the accompanying change in aggregate supply. Thus the movement of c dominates the result and determines whether the adjustment is equilibrating or not. The remaining question then pertains to the possibility of equilibrating adjustments in the capital–labour ratio.

In the deficient demand case the relatively scarce factor is labour and the relatively abundant factor is (potential) capital made available by saving.

[1] A modern version of the equilibrating adjustment in the classical system employs the familiar "Pigou effect" of falling prices on the saving function. The very special nature of the assumptions required for the operation of this equilibrating mechanism has been pointed out, *inter alia*, by Don Patinkin in "Price Flexibility and Full Employment," as reprinted in *Readings in Monetary Theory* (Philadelphia: The Blakiston Company, 1951), pp. 252–83. In addition to the various criticisms that have been levelled against the doctrine that wage and price flexibility can insure full employment, however, there appears to be one basic point that has been neglected. The "Pigou effect" requires that individuals believe each fall in the general price level to mean a permanent increase in the real value of their assets, thereby diminishing the rate at which they desire to accumulate wealth. This in turn requires expectations, held with considerable certainty, that price movements are never, or rarely, reversed—that price movements are overwhelmingly unidirectional. Expectations of this kind and certainty of this degree do not belong in a world of cyclical growth and change, however.

What is required is the adoption of techniques of production that use more capital per worker. This could come about in a given state of knowledge through a fall in interest rates or a rise in real wage-rates. What will be the direction of movement of wage-rates and interest rates when there is a chronic tendency towards deficiency of aggregate demand?

Note first that the failure of the labour supply to grow rapidly enough to warrant investment equal to saving results (paradoxically) not in a labour shortage, but in periodic unemployment. Real wage-rates, instead of rising and inducing the adoption of labour-saving techniques, are more likely to be depressed by the chronic tendency toward unemployment. The real underlying labour scarcity is not indicated in the market.

What about interest rates? There is no long-run "natural" level or direction of movement of interest rates in an economy characterised by chronic deficiency of demand. Periodic depressions serve to reduce saving below its full-employment level to equality with investment. The rate of interest becomes largely a monetary phenomenon in such a situation, which means that the movement of interest rates depends not on "natural" forces, but on monetary policy.[1]

How effective reductions in the long-term rate of interest would be in inducing labour-saving innovation is in any case a moot question. What is really important is not the long-term rate of interest on bonds, but the target rate of return on investment that managers of business have in mind as a minimum when they judge the feasibility of investment opportunities. The fact that the latter may be relatively insensitive to changes in the former has been variously explained; but one important possibility appears to have been neglected. Something like Keynes' speculative motive for hoarding may operate at the level of the entrepreneurial decision as well as at the level of the rentier decision. For when, in order to maintain the rate of capital intensification that saving makes possible, entrepreneurs must be induced by falling interest rates and rising wage-rates to accept lower rates of profit *per unit of capital* than their target rates, they may simply refuse to innovate; this despite the fact that their total profit would be greater if they substituted capital for labour. And their refusal would not necessarily imply perverse irrationality; for it may be based on an expectation that by postponing investment an opportunity to invest at the target rate or better will soon appear. The decision to wait, of course, actually destroys potential capital formation through the reduction of aggregate demand; but the elimination of this potential that could be only realised at lowered rates of return insures that in the long run the rate of profit is maintained. Thus, whereas for Keynes the villain was the rentier (under the assumption that entrepreneurs would always invest in opportunities that promised a net rate of return greater than the rate of interest), it may as easily be the entrepreneur who is responsible for the periodic withdrawals of the supply of capital.

[1] Joan Robinson, *The Rate of Interest* (London: Macmillan, 1952), pp. 4, 28–30.

We should relax the assumption that changes in knowledge are autonomous to allow for the possibility that market forces might guide industrial research in the direction of labour-saving invention. Again, however, the same market forces are required—a fall in interest rates or a rise in real wage-rates. Furthermore, even with the appropriate market influences the adjustment might not be equilibrating for an improvement in knowledge raises the possibility that p would increase more than c, thus intensifying the deficiency of demand.

The conclusion that emerges is that there are no automatic forces in a developed economy tending to adjust the capital–labour ratio to the value required for equilibrium growth. Rather, the equation of saving with the investment required by the growth of the free labour supply would be accomplished (in the absence of appropriate social policies or fortuitously appropriate technological progress) in precisely the manner that Keynes indicated —that is, by periodic depressions. Depressions must occur sufficiently often and be of sufficient severity to reduce saving in the long run to the level of investment required by the rate of growth of the free labour supply and the capital–labour ratio. As was indicated in Section IV, however, the adjustment through periodic depressions means growth at a slower rate than that which could be achieved with the equilibrium value of c in equation (1).

VI. Technological Progress and Secular Stagnation

Before proceeding further let us define more precisely the deficient demand case—the case we assume to be typical of developed economies. All that we have said heretofore is that there exists in this case a persistent tendency for aggregate demand to fall short of full-employment aggregate supply. This could result from a tendency for s, p or both to rise; or for g, c or both to fall.[1] Let us assume that there is a long-run tendency for g to fall (due to a declining rate of population growth), while s tends to remain constant. Furthermore, let us assume no independent movements of c and p in the absence of technological progress.

It should be noted that with these assumptions we have in its simplest form the context within which the argument for secular stagnation has been made.[2] An economy in which the rate of population growth is slowing while the saving–output ratio remains constant would require a persistent rise in the capital–labour ratio if a tendency towards ever more severe and frequent depressions were to be avoided. In the absence of technological

[1] Actually rising or falling values are not necessary. It is enough that $g \cdot c$ be below $s \cdot p$. However, since in this case a once-for-all adjustment could correct any disequilibrium, it seems preferable to assume a persistent dynamic tendency toward disequilibrium.

[2] See, *e.g.*, A. H. Hansen, "Economic Progress and Declining Population Growth," *The American Economic Review*, XXIX (March 1939), pp. 1–15. The gap between the *A* and *B* curves of Fig. 1 would seem to be an appropriate measure of "stagnation."

progress, however, a persistent rise in c would imply a falling rate of return to capital. The necessity of a falling rate of profit is avoided, of course, by having saving and the rate of growth of the free labour supply made compatible through recurrent depressions rather than through a rising ratio of capital to labour. Thus the "stagnation case" presents the dilemma of what might be termed the Marxian and Keynesian alternatives: a steadily falling rate of profit or depressions of ever-increasing severity.

The above argument abstracts from the influence of technological progress, however. The latter can affect each of the variables in our model. It can influence the saving function (s) by creating a stream of new products to tempt consumers and to render existing stocks of durable goods obsolete, as well as by altering the relative income shares of capital and labour. It introduces new and more profitable techniques of production which may change the ratio (c) of capital to labour at which investment takes place. Improvements in knowledge are likely also to raise labour productivity (p), though they need not. Finally, the rate of growth of the free labour supply (g) depends partly on the rate of labour-saving (or labour-using), which is in turn influenced by technological progress.

For simplification let us assume that the constancy of s is partly the result of technological progress so that this influence is already taken into account. We concentrate then on the impact of improvements in knowledge on production techniques and the consequent effects on c, p and g. Furthermore, since labour productivity is likely to rise as a result of technological progress, it is actually on upward pressures on c and g on which we must rely to preserve equilibrium growth in the "stagnation case."

Recall that the value of g is equal to the percentage rate of population growth plus the percentage rate of labour-saving (the rate at which c is rising). Upward pressure on both c and g from technological progress requires, then, that the latter be on balance labour-saving. But while steady labour-saving progress raises c steadily, g rises only if the rate of labour-saving is *accelerating*.

Let us consider two possibilities: first, a steady rate of labour-saving (a constant percentage increase of c over time); and second, a rising rate of labour-saving (the percentage increase of c accelerating over time). In the first case g would always be above the rate of population increase by the rate of labour-saving, but g would still fall steadily because of the declining rate of population growth. c would rise steadily, as most likely would p, the requirement for equilibrium growth then being a rate of labour-saving (rise in c) rapid enough to match both the rate of decline in g and the rate of rise in p.

We have argued above (in Section V) that there is little likelihood that market forces will serve to induce the appropriate rate and direction of technological progress. For the underlying factor relationships—scarcity of labour and surplus of saving—are not likely to appear explicit because of the nature of the cyclical growth process. Booms terminate at or short of

full employment of the labour supply, while periodic depressions serve not only to eliminate the potential surplus of saving but also to create an illusion of labour surplus. Hence it is difficult to see any mechanism by which a developed economy would automatically produce that rate of labour-saving technological progress required for equilibrium growth. Nor is there any assurance, even in the presence of such a mechanism, that the rate of rise in c would exceed the rate of rise in p by the required amount.

Nevertheless, it is possible for autonomously determined technological progress to proceed at exactly the right speed and in exactly the right direction to insure equilibrium growth. Thus it might be argued that there is some rate of technological progress which, if it is sufficiently labour-saving without raising labour productivity too rapidly, will enable a developed economy to avoid the dilemma posed by the slowing of population growth and the failure of the saving function to give way. Let us examine this possibility more closely, however.

Since c must rise faster than p by an amount sufficient to offset the rate of decline of g, c/p must rise steadily. We noted at the end of Section II that when expansion occurs at a uniform rate throughout the economy c is approximately equal to the average capital–labour ratio. To be consistent with our assumption of no independent movements of c or p and as a convenience in isolating the effects of technological progress we will assume initially such a uniform rate of expansion. In this case, then, a rising c/p means a rising ratio of capital to net output for the economy as a whole, since c is (approximately) the capital–labour ratio and p is the output–labour ratio. But the ratio of capital to net output is also equal to the reciprocal of the average rate of profit multiplied by capital's share of net output. That is

$$\frac{K}{Y} = \frac{K}{R} \cdot \frac{R}{Y} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

where K is capital, Y is net output and R is capitalists' income. Thus, a rising ratio of capital to net output (which is required for equilibrium growth in the case under discussion) implies either a falling average rate of profit or a rising proportion of total income accruing to capitalists.[1] When we recall that Marx held that a rising rate of surplus value (which is roughly equivalent to a rising relative share of capital in income) could offset the tendency for the rate of profit to fall, it would seem that introducing a steady rate of labour-saving into the stagnation case can at best toss us from the Keynesian to the Marxian horn of our dilemma.

Which of the two ratios on the right-hand side of equation (2) rises as K/Y rises depends on whether it is predominantly technological progress or market forces that induces labour-saving innovation. In the extreme case where labour-saving innovation is induced by rising wage-rates and falling

[1] Professor William J. Fellner has stressed the importance of this relationship in his *Trends and Cycles in Economic Activity* (New York: Henry Holt and Co., 1956), pp. 254–7.

interest rates within a given context of knowledge the rate of profit must fall; and presumably capital's relative share must eventually fall as well, assuming that only improvements in knowledge can in the long run prevent the elasticity of substitution from falling below unity.[1] If, however, labour-saving innovation is due solely to technological progress both the rate of return on capital and capital's relative share must rise.[2]

Thus a steady rate of labour-saving technological progress will enable a developed economy to avoid the dilemma posed by a declining rate of population growth only under very special conditions. First, its labour-saving aspect (rising c) must exceed its productivity-increasing aspect (rising p) by just enough to match the rate of fall of g. If p rises faster than c the chronic deficiency of demand is accentuated.[3] If the excess of the rate of rise of c over p is greater than the rate of fall of g the economy is pushed into the deficient supply situation of underdeveloped economies. And, second, even after this requirement is met there remains the problem of getting labour to accept a steadily falling proportion of total income—*i.e.*, of accepting wage increases that always fall short of the increase in labour productivity.[4]

While we have argued against the possibility of automatic equilibrating adjustments in capital intensity stemming from the influence of market forces, we should not rule out the possibility that *autonomous* market influences will have an effect on c additional to that of technological progress. For example, steady upward pressure on money wage-rates by organised labour and monetary policies designed to lower interest rates gradually over time could supplement technological progress in inducing labour-saving innovation. In fact, there is some combination of market-induced and invention-induced labour-saving innovation that would maintain constant the rate of return on capital and the relative shares of capital and labour. This would imply, however, that the capital–output ratio is constant—*i.e.*, c and p are rising at the same rate—and we are back on the Keynesian horn of the dilemma.

[1] Cf. J. R. Hicks, *The Theory of Wages* (London: Macmillan, 1932), pp. 127–8.

[2] The effects on relative shares can be seen readily with the aid of the identity

$$r/w \,.\, K/L = \frac{\text{Capital's share}}{\text{Labour's share}}$$

where r is the average rate of return on capital and w is the real wage-rate. In the absence of technological progress a rising K/L will require a falling r/w; and as it becomes ever more difficult to find profitable ways of substituting capital for labour the rate of fall in r/w is likely at some point to exceed the rate of rise in K/L (an elasticity of substitution of less than unity), and capital's share will decline relatively. Labour-saving technological progress, however, raises K/L with no required change in r/w, implying a rise in capital's relative share. We ignore throughout this paper the effects on relative shares of changes in the degrees of competition in product and factor markets.

[3] Technological progress that raises p faster than c should actually be welcomed because it permits a steady fall in s without sacrifice of growth of output. The assumption here, however, is that s is not reduced.

[4] If labour attempts to maintain its share through upward pressure on money wage-rates, entrepreneurs may either innovate further in a labour-saving direction, thus creating the deficient supply situation with a growing surplus of labour (the adjustment Marx assumed); or more likely, they may simply raise prices.

We have yet to consider the case of a rate of labour-saving that accelerates over time. It is possible for the labour-saving component of g to rise as rapidly as, or even more rapidly than, the rate of decline of the population growth component of g. In this case a constant or even falling c/p is compatible with equilibrium growth, implying a constant or falling capital-output ratio. If this rising rate of labour-saving were market-induced and invention-induced in the right proportions, neither the profit rate nor labour's share in income need fall. Note, however, that in order to rescue us from the dilemma of the Marxian and Keynesian alternatives an appropriate combination of technological progress and market forces must create a stream of innovations that is not only labour-saving on balance, but that is more labour-saving (on the average) each year.

This may appear to be a tall order, and we hasten to add an important qualification. In the interest of simplicity we ruled out of our discussion any discrepancy between financial amortisation and replacement investment. It is possible, of course, that technological progress should increase the rate of obsolescence faster than provision for it is made in the financial practices of business. Depending on our choice of definition, we can treat this discrepancy either as a reduction in the ratio of net saving to output or as an increase in net investment. If technological progress is in this way to help extricate us from the stagnation dilemma it must ever widen the gap between replacement and amortisation; and while this seems unlikely, it is at least a possibility that should be mentioned.[1]

Relaxing the assumption that expansion is uniform throughout the economy complicates the question enormously, and almost anything can result. Note, however, that our argument in the simpler case required that K/Y rise at the rate of fall of g when equilibrium growth is achieved (since in this case $c/p = K/Y$, and $c/p \cdot g = s$ is the condition for equilibrium, s being constant). In order for our argument to be upset, then K/Y must be prevented from rising when c/p is rising at the rate of fall of g. Since the effect of a changing composition of employment, taken by itself, could be to cause K/Y either to rise or fall in relation to c/p it would be only happy coincidence if its effect were in the latter direction and of sufficient strength to prevent K/Y from rising.

At this point we should also take into account the possibility that technological progress alters the saving function through its influence on relative shares. When invention-induced labour-saving innovation predominates the tendency is for capital's share to rise relatively, and as a consequence the saving function might also rise, accentuating the deficiency of demand. When, on the other hand, labour-saving innovations are predominantly market-induced the opposite effect on relative shares and the saving function is likely; thus mitigating any tendency for the rate of profit to decline or,

[1] For an excellent discussion of this point, see Howard R. Bowen, "Technological Change and Aggregate Demand," *The American Economic Review*, XLIV (December 1954), pp. 917–21.

alternatively, the severity of depressions. The reduction in the saving function implies a lower maximum growth path for the economy, however.

Finally, let us recall that we have lumped increasing and diminishing returns to capital and labour (taken together) with technological progress. This is a great convenience for our analysis, since the effects of increasing or diminishing returns within a given context of knowledge can be handled in exactly the same way as the effects of improvements in knowledge. That is, increasing returns raises p and may be labour-saving, capital-saving or neutral; while diminishing returns in symmetrical fashion lowers p and may be labour-costing, capital-costing or neutral. Thus, the relaxation of the assumption of constant returns to scale appears to raise no great analytical difficulties.

VII. Population Growth

We defined the " stagnation case " by assuming a falling rate of population growth. Obviously there is always some rate of population growth that will avert a tendency toward chronic deficiency of demand: if we reproduce ourselves rapidly enough we will insure that we are kept so busy providing for our growing numbers that *Keynesian* unemployment will never be a problem. While this solution appears to be a particular favourite of the popular business-men's journals, it would seem to be almost the worst possible from the standpoint of human welfare.[1] For the alternatives to a more rapid required rate of capital *widening* are more rapid capital *intensification*, implying a more rapidly rising output per man; a higher ratio of consumption to output,[2] perhaps accompanied by a more equitable distribution of income; greater leisure; or some combination of these.

Furthermore, the more rapid is the rate of growth of population, the more likely is a tendency toward diminishing returns to both capital and labour for any given rate of resource-saving technological progress. Therefore it is not enough to say that the progress of science will insure that our growing numbers will be fed. What is more relevant is the comparison of human welfare under conditions where capital formation (widening) and resource-saving technological progress serve only to maintain output per man with that under conditions where capital formation (intensification) and resource-saving progress serve to raise steadily labour productivity or, alternatively, to permit mankind ever greater leisure. It may be that some will choose greater numbers over greater welfare per person; but this choice should be made on its own merit, and not because of its effect on the saving–investment nexus. The personal view of the writer is that the " stagnation case " is a desirable state of affairs because of its inherent potentialities.

[1] For a forceful statement of the latter position, see J. J. Spengler, " Population Threatens Prosperity," *Harvard Business Review*, Vol. 34 (1956), pp. 85–94.

[2] Not in this case at the expense of future levels of consumption.

VIII

It should be emphasised in conclusion that the results obtained above stem from the application of our theory to the deficient demand case of growth disequilibrium. The principal reason for this emphasis is simply the desirability (in the eyes of the writer) of a general slowing in the rate of population growth throughout the world. As development proceeds throughout the less-developed areas saving–output ratios should rise and, it is hoped, rates of population growth will fall. Thus, all economies should eventually develop the growth characteristics of developed economies. In the meantime, however, there are economies that face problems of an entirely different nature. And it is even possible that future technological progress will raise the rate of labour-saving so rapidly that even "developed" economies will be faced with a chronic shortage of capital and surplus of labour, despite a slowing rate of population growth. In this case many of the above conclusions would be reversed; but our analytical framework would appear to be still valid and useful.

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THE RATE OF INTEREST, THE MARGINAL EFFICIENCY OF CAPITAL AND INVESTMENT PROGRAMMING [1]

BECAUSE of the striking improvements of recent years in business-investment planning techniques and because of the dominance of large firms in total business investment, the recent survey of fifty-seven large American manufacturers' investment planning procedures by Professors Brockie and Grey [2] is among the most important empirical evidence now available on the question of interest-rate policy's influence on business investment.[3] Although this new survey clearly shows much more precision and rationality of investment planning than did those earlier investigations that have provided the basis for the current skepticism about interest rate policy, the authors interpret it as confirmation of the old low-interest-elasticity findings.[4] With possible qualification for the uncertainty imposed by the fragmentary descriptions of the survey's queries and responses which the authors—having several topics to discuss—provided, it is here proposed, however, that proper interpretations of the three main sets of survey results

[1] The opinions here expressed do not necessarily represent those of the writer's employer, the International Monetary Fund.

[2] M. D. Brockie and A. L. Grey, "The Marginal Efficiency of Capital and Investment Programming," this JOURNAL, LXVI, December 1956, pp. 662–76. The firms included were those of a random sample of 175 manufacturers having securities actively traded on the New York Stock Exchange who answered a mail-survey questionnaire.

[3] The pre-war and early post-war surveys are unreliable, chiefly because of the abnormal economic conditions in which they were made and because of the large proportions of small or weak firms they contained. The unimportance of small firms is illustrated by the fact that firms with $50 million or more of assets did about 60%, and firms with $10 million to $50 million about 17%, of gross fixed investment in manufacturing in 1955. The two groups planned to do about 75% of the total in 1957 (*Survey of Current Business*, January 1957, pp. 20–1, and March 1957, p. 78). The likelihood that surveys made in the late 1940s and early 1950s are no longer representative is suggested by the following:

"When McGraw-Hill first started surveying the outlook for plant and equipment spending in 1948, less than half the companies reporting had any real investment plans at all. Now, nine out of ten companies included in the survey report on plans at least four years ahead."—L. S. Silk (Economic Editor of McGraw-Hill's *Business Week*), *Forecasting Business Trends* (New York, 1956), p. 74.

". . . the concept of planning and control for profits achieved wide acceptance only about 1950."—H. Maurer, *Great Enterprise* (New York, 1955), p. 127.

Inventories were expected to be held constant by American business in 1957, despite the rising sales volume and rising prices foreseen, because of high interest charges (and of storage costs). "These costs are very well known to treasurers, controllers, and financial vice presidents, and these men are now getting more say in corporate decision making."—"Business Roundup," *Fortune*, November 1956, pp. 42–3.

[4] Much of the evidence cited by the authors from earlier surveys in support of their conclusions is discussed in the writer's paper, "Interest Inelasticity of Investment Demand, the Case from Business Attitude Surveys Re-examined," *American Economic Review*, XLVI, September 1956, pp. 565–88, and a study of other reasons and other evidence said to show isolation of investment from the influence of the cost of capital is nearing completion.

offered as " reasons for the evident unimportance of the market rate of interest " would show the new survey to be in fact consistent with usefully high interest elasticity of investment demand, and thus to require—in conjunction with other recent evidence—the reopening of the case for interest-rate policy.

1. " Noteworthy independence of large enterprises from the capital-funds markets " and, hence, from the rate of interest is *not* demonstrated by the fact that: " Of the firms responding to our questionnaire, 85 per cent reported that internal sources were of principal importance in plant and equipment financing." [1] Certainly it cannot be possible to demonstrate isolation of fixed investment from conditions on the long-term capital market by the fact that the least market-exposed 85% financed significantly less than half their gross fixed investment in the market. And even if it should prove that the external-financing firms doing most of the 85% group's investment were companies using the capital market for as little as 20% of their investment finance, serious isolation could not be demonstrated.

This can be shown as follows. If self-financing is to constitute the break in the (hypothetical) chain connecting investment and the cost of capital, then it should be hypothesised that large firms' investment planning procedure includes an arraying of investment projects according to some measure of their profitability. It follows that interest-rate increases sufficient to shift any given part of the least profitable 20% of investment projects from supra to sub-marginality would do so regardless of whether the next-to-least profitable 20% were externally or internally financed.[2] And the 20% range provides an ample margin within which interest rate increases could achieve useful restrictions of aggregate investment (the scope for enlarging investment being, of course, unlimited, even where external financing is only 1% of planned investment).

The reality of the 20% range is established by the fact that in 1954 and 1955 (the years most likely to reflect conditions at the time of the authors' survey) aggregate net long-term external finance equalled 21 and 22% of the aggregate of manufacturers' gross fixed investment plus inventory investment plus rise in net other short-term assets.[3] Of course, if this 20%

[1] *Cf.* Brockie and Grey, p. 666.

[2] This is, of course, only a first approximation. For example, with the larger amount of external financing, a rise in the interest rate would reduce by more the net total of profits obtainable from the year's investment projects (*i.e.*, reduce the " producer's surplus "); in consequence, the risk associated with the marginal project would seem greater and the amount of investment actually undertaken would be further reduced.

[3] This gross fixed plus net short-term investment is identical with gross retained profits plus long-term external finance.

In eight of the eleven years 1946 through 1956 long-term external finance's share has been at least 20% for all manufacturing corporations in the United States. Excluding the partly depressed period 1948–50, the percentage figures are respectively: 54, 38, 36, 35, 20, 21, 22, and >24. Figures are based on L. F. McHugh, " Financing Corporate Expansion in 1956," *Survey of Current Business*, October 1956, Table 2, p. 13. Although these and similar figures are usually reported with inventory investment and undistributed profits both including " inventory valuation "

of external financing were concentrated upon a relatively few firms doing, *e.g.*, 30% of aggregate investment, most of investment would still be isolated from capital-market conditions. But in fact, since the authors' sample shows only 7½% of manufacturers were "mainly" dependent on external funds (all being relatively small firms) and only 7½% more were "about equally" dependent on external and internal funds,[1] the external financing should be fairly widely distributed.

Assuming that a 20% figure for external finance can be applied to the aggregate investment of the 85% of firms financing externally less than half their fixed investment,[2] it follows on the most *un*favourable assumption—the aggregate of 20% of external financing being concentrated among firms financing as much as 45% of their investment externally—that the sum of externally plus internally financed investment by firms in adequate contact with the capital market would have to be equal to a minimum of 44% of the whole 85% bloc's gross investment (= 20% ÷ 0·45). And since the remaining 15% of the sample are all highly dependent on external finance, the implications of the authors' findings must be that more (and probably much more) than half of gross fixed investment in manufacturing is carried out by firms financing at least 20% via the capital market.

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profits, the latter should not be so included: on the one hand, this form of "investment" is not investment in the real sense; on the other, this form of investment is not financed by external funds because it is inseparably tied to retained "profits"—profits which in a sense are only book-keeping items not yielding a flow of cash which could be diverted to other uses. Therefore the external financing ratios here presented are enlarged by exclusion from their denominators of manufacturing corporations' "inventory valuation adjustment" (found in various issues of *Survey Current Business*). (The true ratios can be overstated by amounts up to 10% of themselves because the published data include with long-term external finance "statistical discrepancies" of up to that size.) 1956 is preliminary.

[1] Brockie and Grey, p. 666.

[2] Perhaps 7 percentage points of the 21 and 22% aggregate financing figures would have to be allocated to the (smaller-sized) 15% of firms financing externally half or more of gross fixed investment. The remaining 85% would then have financing ratios of only 16½ and 17½%. However, this group's aggregate financing ratios are biased downwards—as is the case with external finance ratio figures customarily used by economists—by being net of the *negative* long-term external financing always being carried out by a few firms. Those transactions should not be allowed to diminish the importance of what positive capital-market finance is being carried out (and it could easily be argued that, since they are often themselves capital-market operations voluntarily undertaken, they should be treated as *adding* to the extent of the influence of capital-market conditions on investment). The negative financing groups among the ten industrial groups shown in the Federal Reserve data on 198 medium and large manufacturers did negative financing in the years 1953, 1954 and 1955 of, respectively, 0·5, 1·1 and 1·4% of the 198 firms' gross fixed investment. (Data derived from *Federal Reserve Bulletin*, June 1956, p. 588, and June 1955, p. 630). If the 198 firms could be taken separately rather than in large groups much larger amounts of negative financing would, of course, be found. The writer has made the necessary disaggregation for the year 1953 and found that the negative financing ratio was increased from 0·5 to 6%. The higher ten-group negative financing ratios of 1954 and 1955 suggest that these years can be safely alloted 1953's adjustment. With the 198 firms accounting for over half of manufacturing corporations' fixed investment and seeming reasonably similar to the firms in the authors' sample, a 7% addition (= 6% ÷ 0·85) to the 85% group's ratios (of 16½ and 17½%) should be plausible, and the necessary 2½–3½% additions are practically certain.

That result is certainly sufficient to disprove the authors' conclusion that manufacturing investment is largely isolated from the influence of capital-market conditions.

2. Although the authors treat their finding that market interest rates are disregarded in the calculation of returns from self-financed investment projects by 59% of the respondent firms as important evidence that investment is insulated from the influence of interest-rate policy,[1] this finding actually seems consistent with adequate exposure of investment to interest-rate policy. In the first place, since they do not reinforce the 59% figure with, *e.g.*, another 10% of respondents reporting only occasional attention to the market rate, and since they used the 59% figure to prove merely that market rates were " widely [but not " prevailingly "] disregarded "—that " a large number [but not " most "] of companies are indifferent to the opportunity cost of capital " [1]—it may be assumed that (almost) 41% of the respondents *did* allow for the market interest rate in computing the profitability of self-financed investment projects. And the share of these latter firms in the sample's aggregate investment is probably much larger than their share in the sample's population, for the extent of scientific management necessary to computation of expected net-of-interest-cost profits on self-financed investment should be found relatively more frequently among the sample's *larger* firms (and, for firms of equal size, among those who are using external finance and hence, presumably, are doing relatively large amounts of investment). Finally, the formulation of the survey question seems to have excluded two groups who might actually have reported attention to the market cost of capital: those firms using *equity* finance (the " cost " of which is not the interest rate but the per-share-earnings/share-price ratio),[2] and those firms who in this era of prosperity have had sufficient projects of obviously high profitability or urgency to absorb all their internal funds (*e.g.*, the 15% financing half or more of their gross investment externally) and who therefore made refined profitability computations for projects dependent on *external* financing but not for the self-financed projects about which they were questioned.

3. The authors find that 85% of the respondents use either the " pay-out-period " method " or an alternative formulation amounting to virtually the same thing (the percentage of initial cost [of the investment] recovered out of earnings each year) . . . for evaluating prospective investments." Because the pay-out-period method requires that initial cost be recovered during a very small number of years, it connotes very short economic

[1] Brockie and Grey, pp. 666–7.

[2] There are many manufacturing companies who prefer to avoid the risks of additional fixed charges for interest and amortisation, and therefore consider equity funds the source of long-term external finance. The authors are aware of the similarity and the link between the cost of equity capital and the market rate of interest (p. 666, note 5), but their descriptions show that equity capital costs were not mentioned in the survey question.

horizons, very high required rates of return and unscientific investment planning; consequently, the investment plans of 85% of large firms may be assumed unaffected by changes in the cost of capital.[1]

There are several stages in this reasoning which must be questioned. The short pay-out requirement certainly does not connote an equally short economic horizon, for if the project were to be wound up at the end of its pay-out period it would have been an unprofitable or losing venture; [2] until we know just how much longer than its pay-out period an investment's expected economic life is, we know practically nothing about how the risk and uncertainty factor has shortened the economic horizon and inflated the required rate of return on investment.[3]

It is clear in any case that the respondents' procedures show much more sophistication, and much more knowledge about the future, than was true of the pay-out-method users represented in the older surveys. As described above, perhaps a majority of the respondents take account of the rate of interest in planning at least part of their investments. Moreover, since the rate they use is said to be the " market " rate, we may assume that it is not a conventional, rarely changed rate but rather one which varies in response to changes in monetary policy. Similarly, in contrast with the prevalent habit in the past of using as annual earnings in the pay-out-period computation simply the earnings expected in the investment's first full year of use, 58% of the respondents to the new survey make separate earnings estimates for a number of successive years.[4] Moreover, nearly half the respondents carried their estimates of expected income into years beyond the first five.[5] Still more strikingly in contrast with the older arbitrary, short pay-out, short economic-horizon findings: " A large proportion of these companies [the 45% estimating income more than five years ahead] reported that the useful life of the asset is the relevant factor establishing the length of time over which they estimate future incomes." [6] The survey also brings into question the predominance of pay-out periods which are very short; for estimation of expected income for more than the first five years by half of the respondents answering the question demonstrates less uncertainty, longer horizons and lower required profits than previously thought to exist.[7]

[1] *Op. cit.*, pp. 667–9.

[2] Dean, the authors' chief authority on the short pay-out requirement, states unequivocally that the earnings which do the paying out are *gross* of depreciation and obsolescence charges. See references to Dean, p. 669, footnote 3, and p. 670, footnote 7.

[3] The writer's study being completed intends to show that the shortness of reported pay-out periods has been greatly exaggerated, as have the various other reasons for considering the pay-out-period method inconsistent with sensitivity of investment to changes in the cost of capital.

[4] *Op. cit.*, p. 670, footnote 1.

[5] *Op. cit.*, p. 670. And the replies of some of the 45% estimating for five or fewer years " indicate that the length of the pay-out period also determines the interval for which earnings estimates will be made "—clearly an improvement over first-year-only estimates.

[6] *Op. cit.*, pp. 670–1.

[7] The authors cite L. R. Klein as authority for the fact that short pay-out requirements insulate investment from changes in the cost of capital. But in contrast with the above, Klein's assumption

Despite the consistency of the pay-out period method with responsiveness of investment to changes in the cost of capital, its use does suggest *less* responsiveness than would be implicit in use of the more rational, more-precise average net rate-of-return-on-investment method. Unfortunately, the authors have not shown separately the shares of responses reporting the two methods. Apparently relying on one of their two main sources on the inferiorities of the pay-out method, which states that the computed rate of return was simply the reciprocal of the computed pay-out period,[1] they have attributed the same crudity to the former as to the latter and given a single figure for the users of both (85% of all respondents). But this attribution seems clearly to be wrong. In the first place, the M.A.P.I. study concedes that "many who use the rate-of-return device prescribe a net return over and above a conventional depreciation allowance," and it speaks in terms of a gross return which makes the formula assimilable to the pay-out method "for convenience."[2] Moreover, since the M.A.P.I. study was made in

is based on much shorter pay-out periods, viz., "one to five years," and he refers to a "horizon of less than five years" and speaks in terms of "present [1947's cheap-money] interest rates" as contributing to the insignificance of the interest rate. He cites the role of the dominance of self-financing—due partly to the "huge sums of working capital upon which they can draw for expenditures on new plant and equipment [which did, of course, exist at the time he was writing]." A final contrast: "Theoretically, the rational entrepreneur should charge himself imputed costs when he uses his internal funds for investment, but he does not behave that way, as a matter of fact." All of these citations are from the pages in Klein cited by the authors on p. 667. That the interest rate is customarily disregarded entirely is stated both by Klein and by Terborgh (p. 188 of work cited in footnote 4, p. 668). Terborgh also states that, when it is used, a conventional rate is employed (pp. 166–7), that the typical pay-out period is much less than five years (pp. 189–92) and that the computation is usually based on the forecast earnings estimate of the first year only (p. 188). (The authors' citation of Charles F. Roos—pp. 665, 671—to the effect that past rather than expected profits determine investment is a misreading of Roos, who in fact derives five pages later in the cited article an interest elasticity of demand for gross fixed investment of $\frac{1}{2}$–$\frac{3}{4}$ in prosperous pre-war years and—in a revision published in *Econometrica*, October 1955, p. 393—0·8 or more since the Second World War!).

Another of the less-recent surveys to be brought into question by the authors' survey findings is the otherwise impressive intensive investigation of fourteen leading American manufacturers carried out by R. Eisner during 1950–52 (with some rechecks later), which found that investment profitability was usually estimated on the basis of earnings expected during the first year only (R. Eisner, *Determinants of Capital Expenditures*, Studies in Business Expectations and Planning No. 2, Bureau of Economic and Business Research, University of Illinois, 1956, p. 31). Also, Eisner finds no role for the interest rate, though he leaves open the possibility that queries on the per-share-earnings/share-price ratio would have elicited positive responses to his investigation (*op. cit.*, pp. 27–8). (Sufficient conditions for the "almost uniformly negative responses" on the role of the rate of interest may be found in the presence of a few smaller and/or self-financing firms in the sample, and especially in the fact that the greater part of his investigation was carried out during a time when leading firms were paying a heavy excess profits tax which actually turned the already-ow long-term interest rate into a *negative* figure. See Eisner, p. 29 and *passim*.)

[1] *MAPI Replacement Manual*, p. 3.

[2] *Op. cit.*, p. 3, footnote 1. The authors' other main source, Dean's *Capital Budgeting*, seems fairly clearly to consider that the alternative to the pay-out period is the rate of return measured with income *net* of depreciation (rather than the gross-of-depreciation income definition found in the reciprocal of the pay-out period); *cf.* Dean's statement (p. 27) that the tendency to use the pay-out rather than the rate-of-return method exists partly because the former dispenses with the determination of the annual depreciation charge required by the latter.

the late 1940s and since most of M.A.P.I.'s members are relatively small firms, it is reasonable to assume that the return criteria in use to-day by the large firms of the authors' sample use the superior net-return formula (or its discounted present-value variant). None of the many large business' return formulas which the writer has seen uses this gross return definition. The careful survey of fourteen leading American manufacturing firms discussed above reports either net-income returns or the pay-out period (or a *net*-income pay-out period).[1] More significant still, a very recent survey—" an informal survey of about 30 representative [manufacturing] companies " made by a vice president of Thomas A. Edison Industries—finds that the average net rate of return on investment is tied with " market potential " as the most important factor in new-product investments, and that " the most universal standard employed by enlightened management is the return on investment the particular product will provide." [2]

Together these sets of evidence show that the rate-of-return formulas used in the authors' sample of large firms are probably more logical, and imply more certainty of expectations, than does the pay-out formula. And the last piece of evidence suggests that *most* of the 85% of the sample who use either pay-out or rate-of-return formulas use the latter.[3]

To a degree the thirty-company study does support the authors' inference of similarity between the return and the pay-out formulas, for it finds that, just as with the pay-out formula, the value of investment with which earnings are compared is usually the *original cost* of investment rather than the (smaller) average amount of capital net of accrued depreciation remaining invested over the project's expected economic life.[4] However, although the concept, rate of return on gross investment, has no status among economists,[5] its use is fully consistent with rationality, precision and sensitivity to changes in the cost of capital. Business-men offer two main (rational) arguments for using original cost of investment as the denominator in rate-of-return computations: (1) A manufacturing firm does not like to invest with the expectation that it, like a mining enterprise, will have to disinvest its fixed assets via payment of its capital consumption charges to the shareholders. Rather, it seeks " permanent " activities in which capital-con-

[1] Eisner, *op. cit.*, p. 31.

[2] R. M. Oliver, " How to Plan a Profitable Product Line," *Dun's Review*, January 1957, pp. 39, 105–6. This finding of major reliance on the rate-of-return method is particularly striking because it concerns *new product* investment—the kind commonly thought least suited for sophisticated, precise planning methods because of the very high degree of uncertainty it involves.

[3] The authors can, of course, provide the actual distribution of the 85%. They reported, however, that because of the heavy propaganda against the pay-out method a few of the surveyed firms still using it had reservations about it (p. 668); and it may be that, by the time of Oliver's recent investigation, firms having reported use of the pay-out formula to the authors had shifted to the rate-of-return formula.

[4] Oliver, *op. cit.*, p. 39.

[5] Eisner, *op. cit.*, pp. 30–2, expresses distress over his discovery that the *élite* of American business use this " crude " formulation of the rate of return.

sumption charges are retained in the business to supplement old and replace retired equipment. The heavy drain on managerial talent caused by the need to establish entirely new activities every few years makes the limited-future project undesirable. Hence, just as the proceeds from the sale of inventory must be reinvested in inventory and cannot be considered a liberation of invested capital from a going business, so it is foreseen that after some years (and provided the project has achieved the expected success) depreciation accruals will be continuously reinvested during the course of a long period of time. For this reason some business officials have required that suitable returns be foreseeable on a constant amount of capital investment (the original cost) rather than on constantly diminishing amounts.[1] (2) For fairly small investments it may be permissible to estimate the expected return by use of the income foreseen during the first year of operations. Where this is done, the original-cost denominator is appropriate, because as the investment ages and obsolesces its earning power declines, and the decline in income over time moves roughly parallel with the depreciated value of the original capital outlay, so that the first-year rate of return on original investment represents the average rate of return on average net investment.[2] Eisner found that this procedure was commonly used for

[1] P. W. Lyon (Co-ordinator of Financial Analysis, West Virginia Pulp and Paper Co.), "Return on Investment—Tool of Modern Management, II Operating Return on Operating Investment," American Management Association, *Improved Tools of Financial Management* (New York, 1956), pp. 16–17. (Lyon seems to rely also on an argument that the earning power of capital equipment does not fall much as the equipment ages, obsolesces and accrues depreciation reserves.) See also V. C. Freeman (Controller, Dresser Industries), "Planning the Future of a Successful Product," *N.A.C.A. Bulletin*, Vol. 138, May 1957, p. 1105.

It should be noted that although the above reasoning introduces a new element of "permanence" into investment decisions, it permits most of the previously assumed flexibility of physical equipment, for the reinvestment of depreciation accruals makes possible continuous modernisation of the initial plant and equipment as well as some variation in final product.

The justification for using original cost is not entirely logical in any cases where the computation of earnings on the investment does not include an allowance for the interest earned on depreciation charge accruals not needed for acquisition of equipment during the earlier years of the project's life when little replacement and modernisation is called for.

For an example of a firm using the rate of return on *net* investment in its investment planning see F. J. Muth (assistant controller, Armstrong Cork Co.), "Return on Investment . . . I Basic Theory and Application," *Improved Tools*, p. 8.

[2] J. W. D. Wright (assistant controller in charge of capital budgets, International Harvester), "Setting Standards for Decentralized Operations," *The Controller*, XXV, February 1957, pp. 59, 60, 94. This official endorses the rate of return on average net investment, however, for larger projects. And for major projects such as a complete new plant he specifies the more elegant marginal efficiency of capital (time discounting) formula.

Eisner, *op. cit.*, pp. 48–9, gives approximately the same reasoning as point (2) above as that used by a leading agricultural equipment company (which might in fact be International Harvester at an earlier stage of its capital budgeting development). Both Wright and this leading company acknowledge that earning power may not decline quite so fast as the depreciated value of the investment but justify any consequent discrepancy on the ground that it provides a welcome safety factor for protection against risk. In any case, as Wright indicates, the circulating-capital component of any investment project (other than simple replacement investments) does not depreciate at all, so that the total investment depreciates much more slowly than is usually implied by examples assuming 100% depreciation by the end of the project's economic life.

major as well as minor investments, and in so far as declining income constituted its rationale, then the " crude " computed average returns were in fact identical with the sophisticated marginal efficiency of capital (time discounting) method recommended by the authors and by Eisner.

The authors offer brief indications that their survey of seventeen large electric and gas utilities produced results more favourable to the prospects for investment control through monetary policy than did their manufacturing survey.[1] If the reinterpretations of the manufacturing findings here proposed prove to have merit, it is to be hoped that the utilities results will then appear sufficiently unequivocal to justify more extended discussion by the authors.[2]

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[1] Brockie and Grey, footnote 1, p. 662. Direct evidence that interest-rate policy affects utilities is provided by the report of a Chicago bank official that several of his utility clients and a railroad client " have reduced or postponed expansion plans because of high interest rates."—*Wall St. Journal*, June 24, 1957, p. 1.

[2] The very timely survey by H. F. Lydall (" The Impact of the Credit Squeeze on Small and Medium-Sized Manufacturing Firms," this JOURNAL, September 1957, pp. 415–32) has shown that in Britain small manufacturing firms have been little affected by high interest rates; and, depending on the results (not separately reported) for the small number of firms in the largest size class covered—those with 200–499 employees—this survey may throw some light on the prospects for interest-rate policy in the United Kingdom. However, since stock-exchange-listed firms—which do about two-thirds of manufacturing investment (*cf.*, *Board of Trade Journal*, February 4, 1956, pp. 207, 208)—are excluded from this survey, the findings would have to be quite unequivocal to carry much weight in the interest-policy debate, in view of the presumption that large, quoted firms are more sensitive to interest-rate policy than medium-sized, unquoted firms and in view of the statements on the sensitivity of large firms to interest-rate changes made by the executive director of Dunlop Rubber, by the head of the Finance Department of Unilever, by R. F. Henderson and by the *Stock Exchange Gazette* (respectively: *Stock Exchange Gazette*, November 24, 1956, p. 1566; *Journal of Industrial Economics*, July 1953, pp. 241–2, 243; *Banque Nationale de Belgique, Bulletin d'information et de documentation*, April 1957, pp. 238, 239; *Stock Exchange Gazette*, February 15, 1957, p. 515).

THE 1957 INVESTIGATION OF THE FINANCIAL CONDITION OF THE UNITED STATES

On June 18, 1957, Senator Byrd, Chairman of the Committee on Finance of the United States Senate, opened the hearings on the investigation of the financial condition of the United States. The President was anxious to have an investigation of the financial condition; but the United States Senate seemed to be of the view that a committee appointed by the President would consist largely of financial men, and this was not what the Senate, or at least the Democratic members of the Senate who were in control, wanted. It was rather surprising that the Finance Committee took over these hearings since they are not responsible for legislation in this field and would have to appeal to the Banking and Currency Committee for legislation.[1]

The hearings did not deal thoroughly with the broad overall fundamental problems, but did raise some interesting questions, and especially concerning the recent inflation in the United States and the Federal budgetary situation.

Secretary Humphrey alone required fourteen days of testimony, and the resultant volume of his testimony was almost 700 pages of closely printed material. This volume also contains numerous documents submitted by the Secretary of the Treasury. A second volume with the evidence of Under Secretary of the Treasury Burgess has been published, and a third with that of Chairman of the Federal Reserve Board, Martin, is out.

In the United States there is much concern over the problem of inflation. In fact, in two years now we have had a rise in the cost of living of 5–6% or roughly, on an annual basis, about five or six times as large per year as had occurred during the years 1932–52, exclusive of war and the demobilisation years.

In some respects the inflation in the United States has been modest. For example, from 1937 to 1948 the rise of prices was as high as 168 *times* for Japan and 51 *times* for Italy, but only 67 *per cent* for the United States and 75 *per cent* for the United Kingdom. The minimum was for Germany with 50%. From 1948 to 1956 the maximum was 11 times for Chile and the minimum was 7% per cent for Switzerland, with the United Kingdom rise 47% and that of the United States 13%. But nevertheless there is much concern over inflation here, and in part because very few people understand why there should be an inflation with the federal budget in surplus for the last two years. It has been customary here to blame all inflations on the federal government.

[1] The hearings (*Investigation of the Financial Condition of the United States*), continued for almost thirty days with the witnesses Secretary of the Treasury Humphrey, Under Secretary Burgess and Chairman of the Federal Reserve Board Martin. Roughly 1,600 pages of testimony were included.

In fact, Secretary Humphrey emphasised the contribution of the Federal Government toward inflation and insisted that only through a reduction of public expenditures could we adequately treat this problem. Senator Byrd agreed. Under Secretary Burgess, however, modified the Administration position and emphasised the large rise of private investment.

Ever since the Civil War the Republicans have been the party in support of sound money and the preservation of the value of savings and the Democrats the party favouring adequate and even excessive supplies of money and seeking to protect debtors. Even the creation of the Federal Reserve System by the Democrats reflects this fear of insufficient supplies of money. But the Democrats, smarting under the criticism of Roosevelt and Truman for the inflation since 1939, have now become the party of sound money, at least in the sense that they are very critical of the Republicans for having failed to stabilise the price level.

As revealed by the three top witnesses of the Administration, the line of the party in power seems to be as follows.

Their number one problem is inflation. Indeed, Mr. Martin and others suggest that they have a responsibility for growth. But what they emphasise now is the need of containing or even stopping the inflation. Martin sees little hope of a creeping inflation not turning into a more violent inflation. The job of the Federal Reserve, in his view, seems to be to stop any inflation. At present Mr. Martin and other members of the Administration are seeking Congressional support for a clear-cut mandate that stabilisation of the currency should be a fundamental objective of policy. But on other occasions when Congress wished to thrust upon the Administration or the Federal Reserve the objectives of a stable price level the Federal Reserve has protested on the grounds that they were not capable of stabilising the price level. Now they seem to have come out for such a responsibility to be imposed on them by Congress.

Reserve Officials, supported by the Administration, sought higher rates of interest through an increase in the rediscount rate and open-market operations which restrict the expansion of monetary supplies.

In restricting the supply of money and bank activity, the Federal Reserve has been successful. In the year ending August 1957 adjusted demand deposits of reporting member banks actually declined and loans and investments were up by only $1·2 billion or 1½%. But the overall record for all banks since 1952 was not so good. Indeed, total monetary supplies rose by only 7%; but banking debits increased by 40%. This is a low rate of monetary expansion for a country that expands its output by roughly 4% a year and tends to require increased amounts of cash relative to income as standards of living rise. (G.N.P. in real terms rose by 42% in the ten years ending 1956.) Looking back, despite the two periods of tight money in 1953 and 1955–57, some officials have suggested that they erred in overdoing easy money in 1953–54.

The reliance of the Administration is almost wholly on monetary policy. Indeed, in many instances lip service is paid to fiscal policy. But Secretary Humphrey in response to a question of Senator Malone's said and repeated that the only objective of taxes is to collect the revenue. On other occasions the Secretary has made it quite clear that with high prosperity taxes should be reduced. He is unwilling, however, to cut taxes to treat a recession. When he was confronted by Senator Anderson with the point that the cost of the national debt has been cut by one-half since 1946 as a result of the rise of gross national product, he said he hoped that this would not be the way in which we cut the burden of the debt. He preferred very much reducing the debt by repaying it, and he did not limit this to repayment under appropriate business conditions. (Burgess was more cautious on this point.)

Whatever emphasis was put upon proper fiscal policy was expressed in terms of cutting down non-essential public spending. In fact, even the Democrats have made it quite clear that they are very much interested in a tax cut in 1958. It is too early yet to say whether this is the appropriate policy. There are increasing signs of recession, and in the light of these signs a cut in taxes may be the appropriate policy. But both parties seem to prefer a cut in taxes irrespective of what the economic situation is, though the Democratic party in general deserves a higher rating than the Republican on this issue.

From the President down there is little sign that modern theories of fiscal policy had percolated. In his *State of the Union Message* of January 5, 1956, the President said that: " Over the long term, a balanced budget is a sure index of thrifty management—in a home, in a business or in the Federal Government." Neither the President nor the Secretary of the Treasury would say that the time to cut taxes was in recession periods; rather tax cuts shall accompany budgetary surpluses achievable at high levels of output.[1]

Aside from monetary and fiscal policy, the President himself had made it clear that he would depend much upon the restraint by business-men in increasing prices and upon labour in demanding higher wages. The President indeed has been subjected to much criticism for taking this position. The President's position is not unlike that taken by the Prime Minister recently (Cmd. 9725), and I quote:

> " If the prosperous economic conditions necessary to maintain full employment are exploited by trade unions and businessmen price stability and full employment become incompatible. The solution lies in self-restraint in making wage claims and fixing profit margins and prices, so that total money income rises no faster than total output." [2]

Chairman Martin stated clearly the problem of the wage–price spiral. With excess demand, workers were in a better position to demand large

[1] *Budget, 1957*, p. M 7; hearings, *Joint Committee on the Economic Report*, 1956, pp. 172, 204, 328, and *Joint Committee Report on Economic Report of the President*, 1956, p. 32.

[2] H.M.S.O., *The Economic Implications of Full Employment*, Cmd. 9725, 1956, p. 11.

increases in wage-rates. Hence the need of monetary restraint. But he did not go on to say that wage demands might put an intolerable burden on monetary policy.

In the course of these hearings surprisingly little was said about the relationship between wage increases and prices or the relationship between the rise of output and price movements. Politicians, of course, were afraid to suggest the association of wage increases and prices, though at times Secretary Humphrey hinted that some business recession might be desired as a means of preventing a greater inflation and presumably a greater demand for higher wages.

The emphasis of the witnesses in general was on the price level and not on output. In numerous statements Professor Slichter has made the point that one must consider the relationship between output and prices. He would much prefer a 2% inflation per year to the use of imprecise methods of monetary management directed towards stabilisation, which might lead to a recession. In the course of the hearings Senator Anderson pointed out to Secretary Humphrey that over American history there has never been such a long-sustained period of high and rising money rates as from 1955 to 1957 without adverse effects on the business situation. Secretary Humphrey did not seem to be able to find an exception to this rule nor did the other governmental witnesses.

In connection with the relationship between the rise of output and prices and the ratio of wage and price increases the following table might be of some interest.

Ratios of Output, Wage and Price Rises
1948 to 1956

In order price rise, 1948–56.	Rise of Output. %	Rise of Prices. %	Ratio of price to output rise.	Rise of Wages. %	Ratio of wage to price rise.
1. Chile (September 1956) . .	41	1104	27·1	—	—
2. Brazil (2nd Quarter 1956) .	59	219	4·0	—	—
3. France (1955)	33	72	2·0	198	2·8
4. Japan	327	59	0·2	279(1955)	4·7
5. United Kingdom . . .	36	47	1·3	54	1·1
6. Italy	105	29	0·3	61	2·1
7. United States	36	13	0·4	47	3·6
8. India (1955)	71	12	0·2	—	—
9. Germany (1955) . . .	108	11	0·1	13	1·2

* National-income figures were not available in all instances. We had to use industrial output for Brazil, Chile, Japan, Italy and India, and the G.N.P. figures were deflated.
Source: Calculated from I.M.F., *International Financial Statistics*.

From this table it is clear, for example, that in Chile there was a rise of prices over a period of eight years, twenty-seven times as great as that of output, whereas in Germany the reverse happened: there was a rise of output ten times as large as the rise of prices. In other words the German

record was 270 times as favourable as that of Chile. This, of course, suggests that with a galloping inflation the effects on output may be very serious.

This table also suggests that the inflationary effect of wage rises over recent years has been much greater in Great Britain than, for example, in the United States and especially than in Japan. The favourable record of Japan may be explained in part by the large rise of productivity for a country recovering from a serious war.

The question may be raised why has the United States Government failed in its anti-inflationary policy. It is clear, for example, that though the increase in the supply of money was slowed down, investment still continued at a high level, though at the time of writing planned investment was beginning to decline. The fact is (as pointed out earlier) there has been a substantial increase in banking debits. In other words, the first explanation of failure is a faulty theory: the Federal Reserve has assumed too close a relationship between monetary supply and the price level and has not as yet absorbed more modern approaches to this problem.

Second, the failure of the Administration lies in part in an inability or unwillingness to use other weapons of control. Third, there is the problem of the financial intermediaries: the government credit agencies, the life-assurance companies, the consumer credit companies, the saving banks and similar organisations. As the Federal Reserve, through its control of member bank reserves, puts some pressure on commercial banks, the other financial intermediaries fill the gap. In fact, it is a striking fact that nothing was said about the financial intermediaries by any of the governmental representatives despite the fact that this investigation was supposed to cover the financial condition and institutions of the United States. Under pressure Secretary Humphrey admitted they had little control of the financial intermediary. Indeed, in an earlier hearing in 1957 [1] Secretary Burgess admitted that the increase of assets of commercial banks from 1952 to 1956 was only 13%, as compared to 30% for life-assurance companies, 20% for mutual saving banks and 90% for saving and loan associations. Until some measures are taken to deal with the financial intermediaries, the possibility of adequate control of the monetary system is far off. (Secretary Burgess was no more successful than Humphrey in suggesting policies for dealing with the intermediaries.)

In earlier hearings Mr. Bell, a leading public official and now editor of the *Business Week*, said as follows: [2]

> " The past twenty years have brought the development of federally chartered saving and loan associations which to date constitute a third banking system having their own central banks, the federal home loan banks; has brought the rise and growing importance of state chartered

[1] Hearings, Senate Finance, *Saving and Bond Interest Rate Increases*, 1957, p. 32.
[2] Joint Committee on Economic Report, hearings on *Monetary Policy, 1955–56*, pp. 5–7.

saving and loan associations; the entry of life insurance companies into large scale lending paralleling and competing with the commercial banks; the growth of large finance companies providing consumer credit; and of pensions funds, a comparatively new type of financial institution enjoying tax exemption and free from any regulation either federal or state. These pension funds now are engaged in major financial operations and promise to become one of the most important sources of lendable funds in the future.

"In addition there has been an enormous growth of federal instrumentalities such as the Federal Housing Administration, Small Business Administration, and the Veterans Administration which are engaged in lending or in guaranteeing or insuring loans. The report of the Hoover Commission lists 104 such instrumentalities created between 1913 and 1955. . . ."

In a hearing in 1952 the Treasury was confronted with this same problem.[1] The Treasury had to admit that it had little control over these agencies.

"The heads of the lending, insuring, and guaranteeing agencies are responsible to the President; the decisions that they make must be made in accordance with his policies except of course where Congress has itself issued explicit policy directions for making or insuring loans. The heads of these agencies also frequently consult with the Treasury Department . . . in connection with their financing matters. . . . In carrying out their functions the federal lending agencies do not have responsibility for the general credit or monetary situation."

In this connection it is of some interest that from 1954 to fiscal year 1957 there was a rise in loans and investments of federal agencies from $15·5 billion to $18·4 billion, and of guarantees and insurance from $40·5 billion to $57·8 billion. For fiscal year 1958 the respective figures are estimated at $19·6 billion and $65·5 billion.[2] In other words, even during the period of dear money the government agencies continued to expand their loans and investments and guarantees and insurance. There seems to be little attempt to reconcile the policies of the government credit agencies and the Treasury and the Federal Reserve, which were trying to impose dear money.

It is clear, therefore, that the financial intermediaries are controlled only in an indirect manner by the control of the Federal Reserve over reserves of the commercial banks. The expansion of activities of financial intermediaries as well as large liquid resources of the big corporations made it possible, of course, to expand the total amount of spending despite the restrictive measures of the Federal Reserve. This may on the whole have been a fortunate outcome for the country; but it does indicate that the Federal Reserve was operating under great disadvantages.

[1] Hearings, Joint Committee on *Monetary Policy and the Management of the Public Debt*, 1952, esp. pp. 25, 26, 269, 270.

[2] *1958 Budget*, p. 1106.

Another reason for failure of the Federal Reserve has been its excessive emphasis on the rise in the rate of interest as a means of cutting down investment. I may say parenthetically that there is much doubt that a policy directed toward reducing the amount of investment is a correct policy in an inflationary period. Investment, of course, tends to reduce costs by increasing productivity; and the overall policy of trying to cut investment may be questioned. Certainly the writings of Lord Keynes, and experience over the years, suggest that the changes in the rate of interest are not likely to be of decisive influence. This is aside from the point that in the midst of the dear-money policy the Federal Reserve allowed the market rate to rise much above their own rediscount rate, with the Secretary of the Treasury defending the dear-money policy and being embarrassed when this particular fact was pointed out to him by Secretary Anderson.

On this score some comments by H. F. Lydall in his recent article are of some interest: [1]

> "The practical lesson of this investigation seems to be that changes in Bank Rate—within the limits of normal monetary policy—influence the investment decisions of manufacturers principally through their effect on sales expectations and the availability of finance. The influence of the higher cost of loans is small or even negligible. It follows that it is hardly realistic to describe Bank Rate as a 'delicate instrument' capable of ready adjustment to ensure any desired amount of inflation or deflation. Rather it is an uncertain and potentially heavy-handed method of blunting incentives and cutting off the supply of finance to those businesses which depend mainly on outside finance for their operation or expansion.
>
> ". . . Sales expectations can, for example, be influenced very powerfully by changes in taxation and in hire-purchase regulations, as well as by direct variations in government spending."

This excessive concern with the total supply of money as a measure of the inflationary potential is perhaps the greatest weakness of the anti-inflationary policy. Secretary Burgess, for example, boasted of the fact that the debts of the country had risen by $146·5 billion from 1952 to 1956; but the total rise in the supply of money had been only $10·5 billion. He presented these figures to suggest the orthodox methods of finance and the fact that the Administration was not responsible, therefore, for the inflation.[2]

Perhaps another relevant factor about the interest rate is the point that the Administration fairly consistently took the position that the rise in the rate of interest was the result of excessive demands for capital not matched by adequate savings. They refused to take any responsibility for the higher rates. At the beginning of the hearing Secretary Humphrey insisted that the Treasury, for example, responsible for a large part of total debt and total

[1] H. F. Lydall, "The Impact of the Credit Squeeze on Small and Medium Size Manufacturing Firms," ECONOMIC JOURNAL, September 1957, p. 431.

[2] Hearings, *Investigation of the Financial Condition of the United States*, II, p. 666.

issues, had nothing to do with the higher rates of interest. Obviously the Treasury would influence the rate as a seller of securities. Under later questioning from Senator Anderson, he admitted, however, that the Treasury was a factor in the situation. Senator Burgess also had to yield ground on this point.[1] Not only was the government afraid to take the responsibility for the higher rates of interest, but they did not in the manner expected of a restrictive monetary policy rely upon issues of long-term government securities to the market as a means of further increasing the rate of interest. Rather against their own principles, they continued to issue short-term securities.

It is clear from this discussion that the Administration had failed to stop the inflation. Ultimately the inflation will be stopped, if only temporarily; but the damage done from 1955 to 1957 is considerable for a peace-time period.

A halt to the inflation would probably be accompanied by a business recession. By the end of 1957, inflation is slowed down and a recession seems to have arrived.

In 1954, frightened by its own anti-inflationary policy in a period following stable prices, the Administration turned around and introduced a cheap-money policy and also cut taxes by $10 billion. This was appropriate policy, even though it may be admitted that the cut in taxes was not too clearly related by the Administration to the needs of stimulating the economy, but rather was a fulfilment of promises made to the electorate. We are hopeful that the Administration will reverse its policy of dear money once the signs become clear that the country is in the midst of a business recession. Tax reductions are likely to be made in these circumstances, though many of the professional budget balancers will fight hard for maintaining enough taxes to balance the budget.

But let us return to the inflation problem and suggest other means of dealing with it. One approach, of course, is to restrict the rights of the business-man to pass on higher wages in higher prices. Is it possible to force him to absorb some part of the increase in wages? Restrictions on timing of wage deductions from gross income reported for income tax is a possible approach. Business-men may be required to accept wage increases within limited rises of prices. Such policies may be justified when dangers of inflation are substantial.[2]

Obviously another improvement would be to rely more on fiscal policy and less on monetary policy, or at least the appropriate policy would seem to be a reduction in the rate of interest accompanied by higher taxes to mop up excess purchasing power. We would not then discourage investment, but would deal with the excess of income through tax policy.[3]

[1] Hearings, *Investigation of the Financial Condition of the United States*, I, p. 546; II, pp. 1160–5.

[2] On this point I owe much to Professors Slichter and Galbraith.

[3] A. Smithies, "The Control of Inflation," *The Review of Economics and Statistics*, August 1957, pp. 272–83, and A. Hansen, "A High and Rising Interest Rate," *ibid.*, pp. 345–6.

Why has this anti-inflation policy aroused so much antagonism? Of course one reason is that it has failed in its objectives. But many questions of equity have been raised also.[1] In the course of these hearings one would never suspect that there was any objective other than stability of the currency. Actually, of course, there is the problem of growth and the problem of providing necessary services. But the big guns of the Administration, except for some lip service to growth, have clearly concentrated on the issue of stabilising the purchasing power of the dollar.

On the equity issue time and again it has been pointed out that the result of reduced supplies of money or unavailability of money is to give large advantages to the large corporations. For example, the Comptroller of the state of New York pointed out that in one school district in New York in four years the rate had gone up from 2·7 to 4·3%. This difficulty of borrowing on the part of school districts has become a very important problem for the United States, for there is a great shortage of schoolrooms. The school districts, unlike the large corporation, cannot pass on these additional costs to the tax collector or to the consumer.[2]

Another study by the Standard Factors Corporations reveals that from 1955 to 1956 companies with net worth of $5,000 to $25,000 had lost their lines of credit with banks disproportionately. Of these companies 53% had lines of bank credit in 1955 and only 18% in 1956: for companies with net worth $25,000 to $100,000 the figures were a decline from 82 to 44%; for companies with net worth of $2·5 million the relative percentages were 99 and 99.[3]

The costly combination of high money rates, shortage of credit and heavy taxes has also contributed to further growth of large business at the expense of small business.[4]

Another criticism of the current policies is the effect on housing. The number of new units has dropped substantially in the last two years. Despite the fact that an average of eight expert surveys suggests the possibility of close to 2 million units per year in the next ten years, the actual construction is approximately one-half that amount. The high money rates have had considerable effect in this area. A rise of 1% in the rate of interest, roughly the effects of the recent dear-money policy, amounts to an increase in the cost of low-income housing of $10 per month.

The Government also contributes toward higher prices, that is to inflation. Through its credit policies it tries to contain inflation; but through other policies it tends to bring about additional inflation. For

[1] See especially the Senate Hearings on *Financial Conditions* throughout and J. K Galbraith, "Market Structure and Stabilization Policy," *The Review of Economics and Statistics*, May 1957, pp. 124–33.

[2] Hearings, *Monetary Policy 1955–56*, p. 24.

[3] Hearings on the *Investigation and the Financial Conditions of the United States*, Part I, p. 399.

[4] Statement of S. E. Harris, Senate Small Business Committee, *The Impact of Federal Taxation on Small Business*, September 30, 1957.

example, one of the largest increases in the cost of living since 1952 has been in medicine, a rise of 12%. The explanation of this increase is in part the great growth of insurance, which results in the diversion of increased sums for medical services. But the Government has done little to provide the additional facilities. In the absence of constructive policies along these lines, the effect of additional spending is largely to inflate the cost of the medical bill.

Again, another central policy that helps bring about the inflation is the tendency of the federal government to put more responsibilities on the state and local government. But the fact is that tax structures of state and local governments generally are largely oriented to consumption and property taxes. These taxes tend to bring about higher prices, for they are taxes that are largely passed on to the consumer. Federal taxes, however, are primarily income taxes, and ordinarily are not passed on to the consumer.[1] Yet in the last ten years state and local expenditures have increased by 200%. This tendency for these governments to account for larger relative expenditures contributes to inflation.

Despite the repeated announcements of economy, it is not at all clear that the federal government has done all that is required in order to bring economy in government. In 1952, in the famous Morningside Heights interview, the President promised a $60 billion budget. He is now embarrassed by the fact that cash outlays are close to $85 billion a year. This is a very large increase, especially when one considers that military spending was cut by about $10 billion.

In fact, this does not tell the whole story. In the American budget loans and capital expenditures are counted as expenditures. Therefore the Administration at an early point hit upon the idea of disposing of capital assets and cutting down on capital investment as a means of showing an improved budget. It should be added that the policy of disposing of assets was also consistent with the ideological position of the Administration, that is, the less activity of government in competing with private enterprise the better. Disproportionately as compared to earlier administrations, the present Administration has disposed of government-held loans to private banking institutions, of commodities and also of other capital assets. It has shown a willingness to increase expenditures that do not show in the present budget, and notably under the Old Age and Survivor's Insurance programme. Rising deficits here will have to be faced by *later* administrations. In capital outlays, for example, there has been an increased tendency to rely on renting rather than building, for example, post offices. This also means that the budget reveals a much lower level of expenditures *now* than would otherwise be the case. But there is considerable doubt that these are genuine savings. The road programme, which now costs the federal

[1] Joint Committee on Economic Report, *Federal Tax Policy For Economic Growth and Stability*, November 1955, p. 110.

government close to $2 billion a year, has almost wholly been financed through a trust fund, and is therefore not included in the Budget. To some extent the Democratic Congress must share responsibility for the method of accounting for the financing of the road programme. Again, the Government has failed to appropriate funds to the Civil Service Retirement fund over several years. This also tends to give a more cheerful view of the budget than actually prevails.

This policy of trying to show a more favourable budget situation than the facts warrant is especially noticeable in the policy toward guarantees and insurance. The Government has tended to stimulate the rise of guarantees as against loans and investments. One reason for this is that guarantees and insurance are not revealed as part of the budget. From fiscal year 1954 to fiscal year 1958 (estimated) the rise of loans and investments by the Government was of the order of one-quarter, but of guarantees and insurance of five-eighths, or more than twice as large.[1]

Another source of criticism of the tight-money policy relates to the fact that this policy has contributed to the failure of important objectives of the Administration, as is particularly evident in the failure to lengthen the maturities of the national debt. This was one of the fundamental objectives, as was revealed by the 1953 issue of a long-term security of 3¼%. The rate for long-term securities up to this point had been 2½%. As is well known, the 3¼% issue was not a great success. But the high-money-rate policies of 1956–57 made it very difficult for the Administration to pursue a consistent high-rate policy. They did not issue long-term securities in any large quantities. In fact, they admitted that the high-rate policy had jeopardised their policy of lengthening the maturity of debt and reducing the floating debt. In his statement before the Senate Finance Committee the Under Secretary of the Treasury Burgess said as follows: "This record indicates a loss in average length of three months during the period of the past four and one half years. . . ." [2]

The Secretary also tries to give the impression that the floating debt on December 31, 1952, was $74½ billion, and $67 billion on June 30, 1957; but he attains this result by a peculiar definition of the floating debt. Actually the debt under one year (marketable) increased from $42·9 billion to $50·6 billion. By including F, G, J, K saving bonds, in the total floating debt, which are in a sense long-term security but are redeemable by the public at a sacrifice of capital value before the maturity of ten years, he shows a reduction of the floating debt.[3] These bonds declined from $22·6 billion to $13·1 billion (p. 17).

Still another criticism directed against the Administration is that it has sacrificed the government security to the private capital market. As a

[1] *1958 Budget*, p. 1106; also see S. E. Harris, "The Economics of Eisenhower," *Review of Economics and Statistics*, November 1956, pp. 359–61.

[2] *Op. cit.*, II, p. 671. [3] *Ibid.*, pp. 675–6.

result of the higher rates of interest and the shortage of monetary supplies, the financial institutions deserted the government bond market and diverted more and more of their cash to private borrowers, the explanation being, of course, the greater profitability of private lending.

In the early post-war period there has been much criticism by those now in charge of the government's policy of supporting the government bond market. It may well have been that the support was excessive and that the more general inflationary problem should have received more consideration. But in a similar manner one can be critical of the policies since 1952, and especially since 1955, because the Administration have not taken into account adequately the needs of the government bond market. From the end of 1954 to the early part of 1957 the commercial banks had increased their loans by $25 billion and disposed net of $14 billion of government securities. Assurance companies, despite a rise of assets from December 1954 to February 1957 of $12 billion, disposed net $1·5 billion of government securities. No wonder that there has been a panic in the government security market, and the Government was forced to borrow at 4%.

A rather interesting aspect of these hearings is that none of the three leading government witnesses had anything to say about the international aspects of the problem. They did not, for example, deal with, or even mention, the problem of the wage and price levels in the United States in relation to the dollar-shortage problem. In fact, dollar shortage was never mentioned. Keynes' interest in United States wage and price policy relative to the dollar problem will be recalled.[1]

The only international aspects that were discussed resulted from probing by Senator Malone, one of the leading western isolationists. His general interest was that in foreign countries gold circulated, but not in the United States. He insisted that foreigners could get gold coins and Americans could not. He considered this unfair. He also was concerned that of the $22 billion of gold reserves in this country foreigners had claims to about $16 billion. He wanted to know whether the Secretary would allow foreigners to convert their dollars into gold, and therefore jeopardise our position. The Secretary's answer was that, if there were large demands, undoubtedly the Government would take action, for there was no obligation to convert dollars into gold. Here is an exchange between Secretary Humphrey and Senator Malone.[2]

> Secretary Humphrey: "It would not make any difference for the purpose of these figures because it is not included in these figures, but nobody has any—the point I'm trying to make is of this 22 billion dollars nobody has any claim, specific claim, on any of it. Nobody has it earmarked. Nobody has a claim on it. It is simply that they have a dollar deposit account."

[1] "The Balance of Payments of the United States," ECONOMIC JOURNAL, June, 1946, pp. 172–87.
[2] *Op. cit.*, p. 448.

Senator Malone: " Suppose they (foreigners) ask for 9,108 million dollars."

Secretary Humphrey: " They would get dollars unless we want to let them have gold."

Then the Senator wanted to know to what extent under our various aid programmes foreign countries received dollars. From the Department of Defense and I.C.A. the Secretary obtained the following information: In the 9 years ending March 31, 1957, the total aid, that is actual expenditures, amounted to $38 billion; but of these $38 billion only $2·1 billion was actually given in cash: the remainder came in goods and services.[1]

The Secretary was also forced to produce a table which showed the size of the United States' gold stock and also the claims on this stock. For example, in 1946 the United States gold stock was 20·7 billions, the United States monetary gold reserve requirements 10·8 billions, the total foreign dollar holding 6·5 billions and foreign official short-term dollar holdings 3·5 billions. By March 1957 the respective figures were 22·4, 11·76, 16·25 and 9·11 billions. In a little more than ten years foreign holdings of dollars had increased by 9·7 billions, and the gold stock in the United States by only 1·7 billions.[2]

In the course of the hearings much was said about the independence of the Federal Reserve. It will be recalled that in 1951 an Accord was signed between the Treasury and the Federal Reserve which gave the Federal Reserve increased independence in determining the amount of money outstanding. The Federal Reserve was not to guarantee the long-term rate of interest of government bonds as it had virtually done in earlier years. Undoubtedly the Government had requested excessive support on the part of the Federal Reserve without adequate consideration of the effect of this support upon the price level. But in my opinion this did not mean that the Federal Reserve was to be independent. It is absurd to assume that the Federal Reserve, one of the agencies responsible for the stabilisation of the economy and for economic growth, could operate independently of the wishes of all the other agencies inclusive of the President. Chairman of the Board, Martin, put the issue as follows [3] and I quote:

> " This question of independence has been thoroughly debated throughout the long history of central banking. On numerous occasions when amendments to the Federal Reserve Act were under consideration the question has been reexamined by Congress and it has reaffirmed its original judgment that the Federal Reserve should be independent—not independent of government but independent within the structure of government. That does not mean that the reserve banking mechanism can or should pursue a course that is contrary to the objectives of national economic policies. It does mean that within

[1] *Op. cit.*, pp. 450–1. [2] *Ibid.*, p. 482. [3] Hearings, *op. cit.*, III, p. 1258.

this technical field in deciding upon and in carrying out monetary and credit policies it shall be free to exercise its best collective judgment independently."

The Federal Reserve seems fairly sure of its independence and also of its ability to handle this situation.

In view of the failure to stop the inflation, in view of the inequities induced by the restrictive monetary policy, in view of the failure to use all weapons available and to integrate the policies of the various departments and agencies, the Federal Reserve might do well to take to heart some views expressed by the Governor of the Bank of England.

Early in 1955 the Governor " following the most vigorous application of monetary policy in a generation, had to admit that monetary policy was not as potent as it used to be. The Governor complained that monetary policy impinged on a smaller part of the economy than formerly and its impact can be outweighed by outlays and taxes of public authority." [1]

This much may be said in support of the policy since 1952. The government has been anxious to stabilise prices. In a traditional manner the Republicans, in contrast to the Democrats, show more interest in stability of the currency than in the level of employment. In the years 1955–57 the Administration, spearheaded by the " Democrat," Chairman Martin of the Federal Reserve, has courageously tried to stop the inflation. But they have not been successful—in part because of mistakes, inclusive of failure to use other weapons; and in part because the burden put upon monetary policy was excessive in view of wage and price policy, and the demands being thrust upon government. The policy was mistaken in that the economy had been moving sideways with large elements of excess capacity apparent for one to two years in the midst of the dear-money policy. For efforts, Mr. Martin deserves a grade of A; for achievements, a much lower grade would be appropriate.

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[1] " International Monetary Fund," *Financial News Survey*, October 14, 1955; S. E. Harris, *International and Interregional Trade*, 1957, pp. 143–6.

THE PROBLEM OF THE PEAK, WITH SPECIAL REFERENCE TO ROAD PASSENGER TRANSPORT

ALTHOUGH the problem of the peak is common to most branches of transport, it is more especially associated in the public mind with suburban passenger transport, and it is with that aspect of the problem that this article is mainly concerned. In so far as it is a "problem" at all, it is overwhelmingly an economic one. By this I mean there are seldom any technical difficulties in the way of relieving conditions of serious congestion. Supply the technicians with sufficient land, labour, capital and materials, and they would be only too glad to provide all the "capacity" we ask for, whether in the form of additional track capacity or vehicles. But land, labour, capital and materials are relatively scarce and therefore expensive, and are likely to remain so for some time to come. The "problem" therefore is to decide, first, how far we should go by way of using these valuable resources in order to meet peak demands for transport services, and second, in what form and at what prices such services should be provided.

I

Before coming to these problems let us examine precisely why it is so expensive to provide "adequate" passenger-carrying facilities when demand is heavy yet transient. Quite apart from the fact that the resources required may be expensive in themselves, the fundamental cause of high average costs is the fact that whereas in the provision of these facilities a number of costs must be incurred and commitments entered into, the magnitude of which depends essentially upon the capacity for which provision is to be made, the opportunities for recovering sufficient revenue to cover such capacity costs and commitments are confined to a very short period of time. Hence, if the services are to pay their way, there must inevitably be either acute congestion in the vehicles themselves (earning much per vehicle-mile), or queues (enforced staggering), or high fares, or a mixture of them all. To provide extra bus services, for example, at the peak along a particular route may require the provision of extra buses, garage accommodation, drivers and conductors, and all the other requirements of providing additional capacity. Assuming these extra costs must be covered by revenues earned, the latter must be sufficient to cover not only those variable costs of operation which depend on vehicle-miles worked, such as petrol, oil, and some wear and tear, but also such time or capacity costs as interest and depreciation on the capital expenditure involved, rent and rates on extra garaging accommodation, vehicle licences and insurance, and the full costs of employing additional drivers and conductors. The crux of the matter

being that in so far as the demand for the services to be provided is confined to a very brief duration, virtually all the revenue required to meet both time and variable costs may have to be earned during that short time. In short, the opportunities of spreading the burden of time or capacity costs between a large number of hours, passengers, or vehicle-miles are strictly limited. To put it another way, *it is not possible to achieve the economies associated with the intensive utilisation of capital or labour*, with the result that average costs and therefore average earnings per vehicle- or passenger-mile must of necessity be high. An additional cause of high costs per passenger-mile is the serious lack of " balance " of traffic which often accompanies the provision of daily suburban transport services for passengers travelling to and from their work.[1] In cases where garages are at the centre of the city, there is the relatively empty journey out into the suburbs to bring the workers in. Where garages are in the vicinity of the dormitory areas, there is the relatively empty journey back. Thus, average loadings tend to be reduced and the need for high average earnings per seat-mile occupied correspondingly urgent.

An example of such a combination of circumstances arises when a Local Authority builds a housing estate some miles out from a big centre of employment to which tenants must travel daily to work. For in this case the commuters in question tend to be all of the same income group and therefore to start work at about the same time. In addition, if, as has normally been the case, they belong to lower-income groups, there is little surplus purchasing power available to permit much off-peak pleasure or shopping travel on the part of those who don't actually go out to work themselves; the more adequate the shopping facilities provided locally, the less the likelihood of there being profitable off-peak traffic. Finally, if the area of the housing estate is designated " residential," there is no backward or " return load " traffic made up of those coming into the area for employment. In these circumstances, so different from those which obtain in Central London for example, it would seem that, in the absence of subsidy, either queues must be long and passengers thereby forced to spread themselves over a longer period than their first preference, or costs and fares per passenger-mile are bound to be at a high level.

II

As regards the financial limits within which the operator must keep, *it will be assumed throughout that any service provided has got to pay its way*. Thus, although the buses in question may be earning very different amounts at different times of the day, total and average earnings have got to cover total and average costs. But it will also be assumed that the operator does not want to do more than this. Thus, should he find himself earning more than

[1] On some routes in London (where generally speaking the volume of off-peak travel is substantial), the balance of traffic in peak hours is so bad that the average loading in peak hours is no better than in off-peak hours when the flow, although in no direction so large, is better balanced.

what it costs to provide the service as a whole, then he will either provide additional services at the peak, or reduce fares, or both. Similarly, if costs are not being covered, then some adjustments in service or fares will be made. Finally, unless otherwise stated, it will also be assumed that there is only one operator responsible for working the route, who, whilst enjoying some measure of monopoly, is not interested in earning more than whatever his total costs (including interest on capital) amount to.

III

Let us start by considering a case in which there is a somewhat exclusive demand for passenger services between 7.30 a.m. and 9.30 a.m. in the morning and again between 4.30 p.m. and 6.30 p.m. in the afternoon. It is " exclusive " in the sense that there is virtually no demand for the services outside those hours, whatever inducements (say, by way of lower fares) are offered to encourage such traffic. In this case, the total cost of providing the whole service has got to be met from the revenues earned in the 4 hours when there is this sharp demand. This simple case is illustrated in Fig. 1, which shows what are the costs and earnings of an individual bus (one of several) serving the route in question. Along *AB* is measured and marked a period of 10 hours from 4 a.m. to 2 p.m. Given a uniform m.p.h., *A* to *B* can also be taken as measuring *potential* vehicle-miles operated. (Similar conditions are assumed to exist during an afternoon peak from 4.30 p.m. to 6.30 p.m.)

Up the vertical scale *AC* is measured both the level of costs incurred and revenue earned per vehicle-mile. The level of actual earnings is represented by the line $RPTP_1S$. As regards costs, running costs per vehicle-mile, *i.e.*, those costs which vary directly with vehicle-miles operated, such as fuel, lubricants, tyre-wear, and some maintenance and depreciation (that due to wear and tear) are taken as being 1*s*. The maximum amount that can be earned per vehicle-mile at any one time is assumed to be approximately 7*s*. 6*d*., that is 60 passengers travelling at $1\frac{1}{2}d$. per mile. In this first case (Fig. 1) that sum is being earned during much of the peak period between 7.30 a.m. and 9.30 a.m. The bus in question started work or left the garage at 6.30 a.m. Up to 7 a.m. it was running very light from garage towards the district in which the peak demands arise, and was necessarily earning less even than variable costs. (Running to and from garage usually involves some " service " mileage for which earnings are virtually nil.) From 7.0 a.m. to 7.30 a.m. it was starting to gather substantial traffic, and was actually earning more than variable costs. A corresponding decline in traffic took place at the end of the peak between 9.30 a.m. and 10.30 a.m., the pattern of the afternoon peak being roughly similar to that of the morning.

Let us assume that in these circumstances the service as a whole " just pays," but no more. That is, gross revenues are sufficient to cover all the

costs necessary to justify the continued operation of the service both in the short and long run. But that, were additional buses put on with a view to relieving that, measure of queueing and congestion that in fact existed at the peak periods on this route, the extra gross revenue that would be earned by reason of a somewhat more "adequate" service would definitely *not* cover the extra costs involved. Thus, if the management is under an obligation to make the service pay, however bad congestion may appear to be, no such relief could be given to the situation. The public is asked to grin and bear it! Short of running the services at a loss (which we have

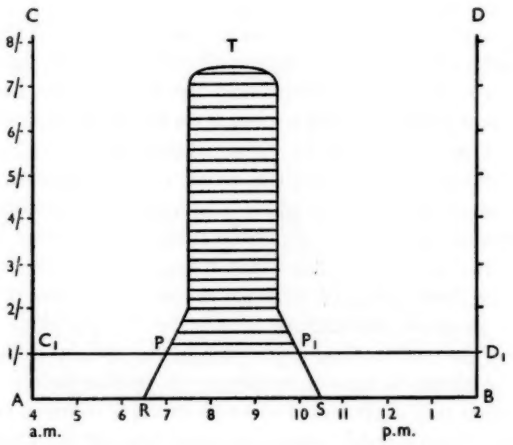

FIG. 1.—All overheads have to be earned between 7 and 10 a.m. These earnings are represented by the shaded area PTP_1.

ruled out), maybe that is the price that must be paid for the provision of services on such a scale yet for so short a time.

But there is one possible course of action which even in such circumstances should not be forgotten. I refer to the possibility of in some way changing the "quality" of the service provided (and of course the price paid for it too), suchwise that the position as described above may be said to become "relieved." Although this question may appear to be somewhat of a digression from the main argument of the article, it seems desirable at this stage to raise the very important question of what is the most appropriate combination of money-price per passenger-mile on the one hand, and the quality or adequacy of service given on the other. For just as adequacy of service can always be increased if there is an assurance that the public is prepared to pay for it, so fares can be reduced or at least "held," so long as quality of service is maintained at a sufficiently restrained or austere level.

IV

It may well be that in the very overcrowded circumstances described above, a 10% rise in fares would have little or no effect on the numbers travelling, so intense is the demand for facilities. Then, if such an increase was imposed without in the first instance adding to the services, the service as a whole would be more than paying its way, and the undertaking would be in a position to increase the adequacy of the services provided at the peak by putting on extra buses till such time as the undertaking is again no more than covering costs. A new equilibrium would have been reached. Fares would be higher, but the adequacy of service provided improved. It is quite possible that this new combination of fare and quality of service would be more in line with what the public most prefers. Should the introduction of the new combination of higher fare with better service, for example, lead to a larger total number of persons using the service than heretofore,[1] *there is a presumption that a more preferred or cheaper (in the broad sense) service had in fact been provided.* There may also be circumstances in which a more austere service (more standing room but less seats) coupled with a low fare-level may similarly prove a more " popular " proposition. Assuming, however, that the undertaking in question has been reasonably correct in assessing the public's preference in this respect—that it has neither provided a too high quality of serving having regard to its great cost nor too low a quality having regard to the physical discomforts involved—the problem of how much capacity to provide and at what price presents no special difficulties.

In so far as there is now a tendency in public policy both to make individual services pay their way and to fix charges more in relation to costs than heretofore, there would seem to be good reasons for charging a higher level of fare in circumstances similar to those described above, where demand was so restricted over time, than where demand is not so restricted.

V

Having started by assuming circumstances most inimicable of all for the economic provision of either comfortable or cheap public-transport facilities at peak periods, some modifications will now be introduced. Let us suppose that a demand for services outside the peak period develops. Now any additional *net* revenue[2] earned outside the peak is an additional contribution to the time or capacity costs, which we have assumed have got to be covered by revenues earned from the service as a whole. To the extent, therefore, that additional net revenue can now be earned in the off-peak, to that extent can the peak be relieved of the necessity of carrying the whole burden of the overheads in the shape of discomfort or high fares. Fig. 2 illustrates this different set of circumstances.

[1] The existence of notoriously crowded public services always deters some from using those services, encouraging the use of cycles, cars and taxis, walking and residence in other districts.

[2] That is revenue surplus to running costs as defined above.

In contrast to Fig. 1, the public demand for transport, instead of petering out altogether by 10.30 a.m., is well maintained throughout the middle of the day, revenue earned per vehicle-mile at noon being round about 2*s*., giving a net revenue of 1*s*. per mile, the assumed level of costs special to off-peak operation being 1*s*. The amount of "net" revenue now being earned *additional* to that earned in the first instance (Fig. 1) is shaded. Having assumed that in the difficult circumstances illustrated in Fig. 1 the service was nevertheless just paying its way, it follows that in these new circumstances the service must be more than doing so. The undertaking

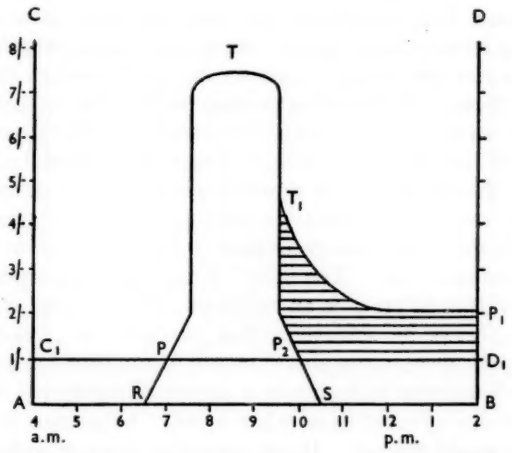

FIG. 2.—Substantial contributions to overheads, additional to those earned in Fig. 1, are here earned between 9.30 a.m. and 2 p.m. These *additional* net earnings are represented by the shaded area $T_1P_2D_1P_1$.

is now therefore in a position either to add facilities to the peak period, thus reducing over-crowding and the length of waiting queues, or reduce the level of fares, or both. It follows from this that, from the point of view of an individual undertaking's capacity to meet peak demands to the greatest extent possible, no opportunities of earning additional *net* revenue in the off-peak periods should be missed.

This brings us to the important question as to precisely what extent should an undertaking work into the off-peak period, whether we look at it from the point of view of a single operator in search of additional contributions towards his overheads or several competitors all interested in making both ends meet. (The question is really fourfold in that it raises the four separate but similar questions: first, at what time should a service start up in the morning; second, when should it (if at all) close down after the morning peak; third, when should it start up again in the afternoon; and lastly, when should it be withdrawn in the late evening.)

The short and simple answer to this question is that so long as revenue is at a sufficiently high level to cover those costs special to the off-peak periods which vary with vehicle-miles worked, in the case under review 1*s.*, then continued operation into the off-peak is justified. But if vehicles are worked into the off-peak periods suchwise that those avoidable costs are not covered, then losses are being incurred. *Hence the importance from a practical point of view, first, of knowing precisely what is the level of an undertaking's costs which vary with vehicle-miles operated—that is, the level of cost that must be exceeded if any net revenue is to be earned in the off-peak; and second, of knowing whether such costs are in fact being covered by revenue earned.* For if mileage is being operated outside the peak, revenue from which does not cover the extra costs incurred, then losses are being incurred and, on our assumptions about overall profitability, additional burdens are being placed on the peak services themselves and those who use them. If alleviating pressure at the peak is our main concern, the broad aim should be to continue operation into the off-peak, so long as revenue exceeds the extra costs of such operations, but no further. Similar considerations should decide the times at which services should start in the early morning and continue into the evening. In every case the criterion should be, does the extra mileage worked bring in revenue at least as much as the extra costs incurred? The term " broad aim " is purposely used, as it is not suggested that in practice an arithmetically accurate adherence to the principle can always be achieved. For example, as already mentioned, there is usually the need to run almost empty to and from garage. Or again, it may be good business to maintain a degree of regularity throughout the middle of the day greater than what a strict adherence to revenue-cost considerations would suggest. It also costs something to withdraw a service for a short time.[1] It is nevertheless true to say that the nearer to the " ideal " any operator can keep, the better position he will be in to provide additional or reasonably adequate facilities at the peak, which is the problem with which we are here concerned. These " ideal " points for starting and stopping are shown as P and P_1 in Fig. 3, which again represents a single peak period.

Along AB is measured time as in Figs. 1 and 2. CD represents the level of costs which vary with vehicle-miles operated. The line $RPTP_1S$ represents the level of revenue per vehicle-mile that can be earned on the route in question at the times stated along AB. It will be seen that operation before 7 a.m. or after 10 a.m. would incur losses (marked in vertical shading), whereas between 7 a.m. and 10 a.m. surpluses are being earned (marked by horizontal shading).

Two further observations seem worth making at this stage. First,

[1] In other branches of transport many and varied considerations may arise. At a slack time of the year when shipping freights are at a low level it may be better for a tramp vessel to accept quotations that actually fail to cover current operating cost than go to the heavy expenses involved in laying up a vessel for a few months, which nowadays may include the difficulty of getting a suitable crew together again. A small accounting loss is better than a large one.

although we have assumed the operator in question to have been in a more or less monopolistic position, the proposition in question has equal significance in competitive situations. For in a situation in which there are a number of financially separate operators whose profit margins are small, no *one* operator could afford either to go substantially beyond the points P and P_1 in Fig. 3, and thus incur losses, or to stop working substantially short of them, and thereby forgo opportunities of earning net revenue. In either case he would be putting himself at a financial disadvantage in relation to his

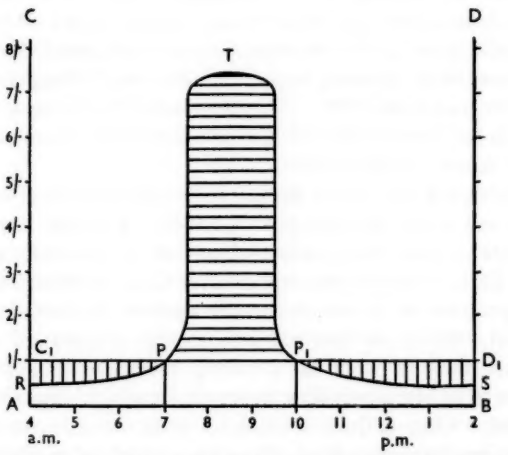

FIG. 3.—This shows when it would pay best both to start operation in the morning (at P, *i.e.*, 7 a.m.) and to cease operation after the peak (at P_1, *i.e.*, 10 a.m.). The losses that would be incurred were operation to be undertaken before 7 a.m. or after 10 a.m. are marked by the areas C_1RP and P_1SD_1 and shaded vertically.

competitors. Indeed, one might go so far as to say that the more competitive the situation, the nearer to the points P and P_1 would each operator be constrained to commence and terminate operations. It has sometimes been argued that private operators working for profit are only interested in the peak hours, in which they are said to "skim the cream of the traffic." It would appear from above, however, that it is as much to their interests to go into the off-peak periods as any publicly controlled monopoly. Not that they would ever wish or be willing to go farther than where they cease to cover their variable costs. It hardly needs saying that the problem facing all large undertakings is not so much a matter of the withdrawal of all services at P_1 or none at all, but rather of how much "thinning out" of services is to be undertaken in the particular circumstances of the case. There would, of course, be a tendency to withdraw the vehicles with relatively high variable costs and low earning power (usually the older vehicles)

rather than those with the lowest variables and highest earning power (usually the newer vehicles).

Second, there is the question whether we *want* any of our publicly controlled services to operate into the off-peak to the extent of incurring expenditure uncovered by revenue and therefore of making losses. The consequences of doing so are clear. By running off-peak services beyond the points P and P_1 in Fig. 3, an undertaking is inevitably adding to the burden to be borne at the peak. By making losses in the valley hours, it is imposing the requirement of earning correspondingly higher amounts at the peak. Is it in the public interest so to "subsidise" the off-peak traveller, the shopper, the theatregoer and what some would regard as the less urgent types of pleasure travel at the expense, in terms of higher fares and/or more acute congestion, of the journey to work? My own feeling is that there is no general case for such a subsidy. Nor, however, should those who make use of the off-peak services be denied the benefits of the (sometimes) very low costs involved in providing them.

It is not intended here to go deeply into the question of charging differently as between peak and off-peak periods. Enough has already been said about costs to show that the marginal cost of providing extra bus-miles at the peak is likely to be enormously greater than the marginal cost at other times. The problem is, however, complicated by the fact that money-price is not the only factor in the market, as the absence of over-crowding in the off-peak may in itself be a strong incentive to avoid rush hours. There do seem to be circumstances, however, in which some price differential is fully justified. One of these is when off-peak services can be made to be profitable only by charging a level of fare lower (or higher) than that charged at the peak. In this case the differential should, by making the operation of off-peak services profitable, benefit the peak-hour traveller by relieving him of the full burden of overheads. Another case may be when a price-differential can, by smoothing out or steadying the general flow of traffic, ensure that both a higher load factor and a higher utilisation factor are obtained, thus reducing average costs and therefore the average level of fare. But perhaps the strongest justification of all for inter-temporal differentials is based on the facts that whereas to provide extra bus-miles at the peak involves the provision of extra capacity in terms of extra buses, crews, garage accommodation and so on, extra mileage in the off-peak may cost little more than the cost of fuel, lubricants and a little depreciation.

VI

So far we have assumed that there is a fairly clear division between variable costs (those that vary directly with vehicle-miles operated) and overhead or capacity costs (those that go on in time, irrespective of mileage worked), and that most operators know pretty accurately how large their

variables are. We have further assumed that they are much the same as between different undertakings. But in respect of one item of cost we are certainly not justified in making the last assumption. I refer to the wages of drivers and conductors. Should we, when examining the problem of the peak, regard them as a variable or an overhead cost? The short answer to that question is that it all depends upon the terms on which crews are engaged. In so far as a man is engaged and paid for a guaranteed minimum period of $7\frac{1}{2}$ or 8 hours worked consecutively, then, *so far as that $7\frac{1}{2}$ hours is concerned*, the item of wages is very much an overhead cost. No matter whether a crew is on the road for 7, 5, 4 or a couple of hours, under many agreements wages must be paid for the full $7\frac{1}{2}$ or 8 hours. So that, since some peak demands are of so much shorter duration than the time for which crews are thus engaged and paid, for our purpose and under such agreements wages must be regarded as an overhead. On the other hand, if a driver is self-employed, or can be engaged during the peak only or on an hourly basis, then the item of wages at once becomes a relatively variable cost. And since wages are by far the largest single item of cost in the operation of public-service motor vehicles, the matter is of first importance.

Possibly the best way of appreciating the significance of what precisely the terms of engagement are to an undertaking's capacity to meet a sharp peak load, is to compare two extreme cases, in one of which a firm is committed to pay its crews for a guaranteed minimum period 8 hours worked continuously, but in the other it can engage men on an hourly basis.[1] (It will be noted that in both cases there are still those absolutely variable costs such as fuel, tyre-wear and so on. If these latter are not covered by revenue, then losses will be incurred in either case.) Let us assume that the level of revenue that each firm can earn by serving a particular route is the same. This level is represented in Fig. 4 below by the line $RPTP_1S$.

Revenue begins to exceed " absolute " variables at about 6 a.m., the peak being reached between 7.30 and 9.30 a.m. By 12 noon, however, revenue again falls below such variables.

Let us now consider how these two operators react to such a situation, faced as they are with identical conditions both as regards their prospects of earning revenue, and their " absolute " variables. Let us start by examining what is likely to be the policy of the operator who can hire labour by the hour (Operator I) and to whom therefore (except for periods less than an hour) wages are virtually a variable cost. As regards his time of starting, he will not necessarily start at 6 a.m., *i.e.*, when revenue starts to exceed " absolute " variables. For he will ask himself the question whether the revenue earned between 6 a.m. and 7 a.m. will not only cover " absolute " variables but also the extra wages to be paid by starting at 6 a.m. instead of 7 a.m. Since to him wages are among his variable costs, he will not be

[1] A middle case is that of the " split shift " when crews can be engaged for 4 hours in the morning and 4 hours in the evening.

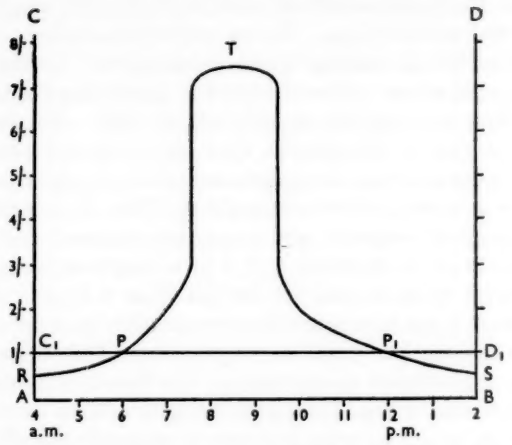

FIG. 4.—This shows the level of revenue earnable ($RPTP_1S$) and that of "absolutely" variable costs (C_1D_1) with which both types of operator mentioned in the text are faced.

interested in coming into service until revenue covers not only "absolute" variables but wages also. Similarly, when it comes to withdrawing services with the passing of the peak, to justify his operating between (say) 10 a.m. and 12 noon, revenue must be sufficient to cover the extra wages costs thereby incurred, costs which he could avoid if the service was not so continued. Thus, as shown in Fig. 5 below, Operator I would be neither interested in

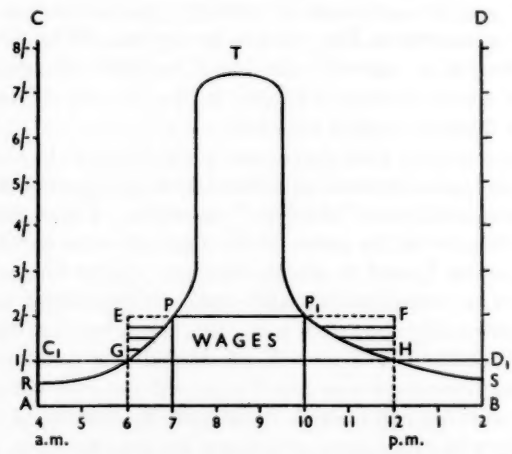

FIG. 5.—Showing times at which it would pay Operator I to start (at P, *i.e.*, 7 a.m.) and stop (at P_1, *i.e.*, 10 a.m.), and the losses (represented by shaded areas EGP and P_1HF) he would incur were he obliged to start at 6 a.m. and continue until 12 noon.

coming into service from 6 a.m. to 7 a.m. nor continuing his service between 10 a.m. and 12 noon, for in neither of those 3 hours would the extra revenue earned exceed the extra costs which he would have to incur. Should he do so, or were he compelled to do so by law, he would be making losses to the extent of the shaded areas *EGP* and P_1HF in Fig. 5. It is to his interest to work from 7 a.m. to 10 a.m. only.

Let us now turn to what Operator II would do in these same conditions of demand, committed as he is to the payment of wages for a minimum of 8 hours at a stretch or not at all. In this case, once the crew signs on at (say) 5 a.m., it is available for work, apart from rest or meal times, for 8 hours, *at no extra cost to the undertaking*. Within the 8 hours concerned, the management is clearly interested in earning anything over and above " absolute " variables towards this " overhead " of wages. So that it will be interested to start operations whenever the level of revenue earned exceeds such variables. Operator II's case is illustrated in Fig. 6 below.

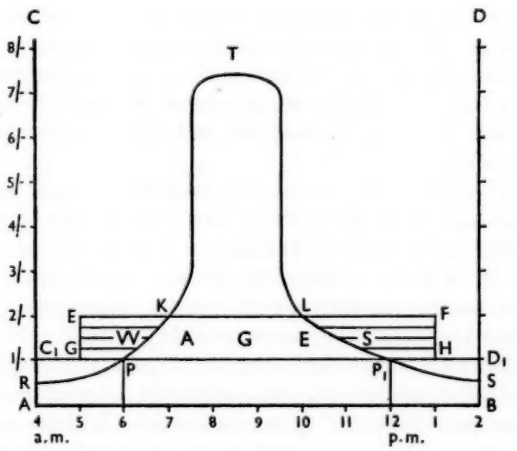

FIG. 6.—Showing the times at which it pays Operator II to start (at *P* or 6 a.m.) and stop (at P_1 or noon) operation, and the amounts by which he is less well off than Operator I (represented by shaded areas *EGPK* and LP_1HF).

It will be seen that at 6 a.m. the level of revenue ($RPKTLP_1S$) passes the level of absolute variables (C_1D_1), so that it will be about then that he will start. And as regards withdrawing services after the peak, it is worth his while to continue operation after 10 a.m. and until 12 noon, since earnings remain well above his absolute variables until that time. To work beyond noon would, however, incur loss, so he would tend to cease operation at noon. Thus, whereas it is to Operator I's interest to operate from 7 a.m. to 10 a.m. only, it is to Operator II's interest to operate from 6 a.m. to 12 noon.

As regards the relative profitability of these services to the two kinds of

operators concerned, the crucial question arises which of the two is doing better from a financial point of view, faced as they are with precisely the same demand conditions. Comparing the fortunes of the two operators as depicted in Figs. 5 and 6, it will be seen from Fig. 5 that Operator I's net earnings are represented by the area PTP_1. He incurs costs between 7 a.m. and 10 a.m. only, these costs being made up of his "absolute" variables plus wages for that period. His gross receipts being represented by the whole of the area lying below the line PTP_1, his net earnings are represented by the area lying below the line PTP_1 but above the line PP_1, that is the area TPP_1.

The case of the second Operator, as shown in Fig. 6, is very different. Since he is on the road for 6 hours instead of only 3, both his variable costs and his earnings are more than those of Operator I; whereas his wages bill is for 8 hours. Indeed, if we assume for the sake of simplicity that the rates of pay per hour are the same in both cases, their wages bills are in the ratio of 8 : 3. Costs incurred in respect of absolute variables are double those of the second Operator, since they are incurred for 6 hours instead of only 3. But his earnings are also greater to the extent of the two areas lying below PK (between 6 a.m. and 7 a.m.), and below LP_1 (between 10 a.m. and 12 noon), which areas represent the extra revenue earned by reason of starting earlier in the morning and continuing longer into the off-peak than Operator I.

So far as overall "net" results are concerned, it will be seen that the first Operator has done much better for himself than Operator II. It will be seen that in the peak period, from 7 a.m. to 10 a.m., they are both earning and (in a sense) costing the same. But if one compares their respective positions during the periods on either side of that peak, it is clear that Operator I is in much the more enviable position. For he has neither incurred any costs nor earned any revenue. Operator II, on the other hand, has incurred both running costs and substantial wage costs. *But such additional costs are quite unmatched by revenue earned.* Indeed, compared with Operator I, Operator II has incurred costs in excess of revenue to the extent of the two shaded areas in Fig. 6. Thus, Operator I is doing much better from an overall "net" point of view than Operator II.

The significance of the above is obvious. It shows that where peak demands are sharp and substantially shorter in time than $7\frac{1}{2}$ or 8 hours, operators in a position to engage labour on terms similar to Operator I are much better able to meet those demands than operators in the position of Operator II. There might be conditions of demand, for example, in which Operator I could make a particular service pay, whereas Operator II could not do so. Or again, if, in the circumstances described above, Operator II, in spite of his high costs, was in fact just making both ends meet, it follows that Operator I must have been doing much more than this, and therefore, on our earlier assumption that neither operator is interested in earning more

than his total costs, would be in a position to provide a more ample or cheaper service to the public at the peak than would Operator II.

VII

If by " solution " we mean that every worker wishing to travel in the rush hours can at an acceptable fare be provided with a seat to himself, then there is clearly no solution in the foreseeable future. In most modern societies it would seem that there will always be circumstances in which travel at peak periods by public transport will involve some queueing and a good deal of standing. But within the limits set by the requirement that the services in question must pay their way, one may well ask in the light of the above analysis by what means we can at least be sure of making the best of an admittedly difficult situation. In this connection I think the following points are worth making:

1. As was pointed out in Section I, the underlying difficulty of providing " adequate " facilities at peak periods stems from the brevity of time during which all time or capacity costs associated with providing such facilities have to be recovered. It followed from this (Section V) that it is in the interests of peak travellers that no opportunities should be missed of earning " net " revenue outside the peak. For to the extent that this can be done, the peak is relieved of the necessity of earning those time or capacity costs associated with providing the service as a whole. No less important, there followed the injunction that it is very much against the interests of travellers at the peak that losses should be incurred at off-peak periods. For thereby the burden to be borne by the peak, so far from being relieved, is that much increased. Hence, from a practical point of view, the vital importance of knowing not only the magnitude of the variable or avoidable costs incurred by providing these off-peak services, but also whether they are being covered by revenue.

2. Those responsible for providing public passenger services should within the limits set by making all services pay their way at all times strive to provide that combination of quality of service and level of fare which most nearly conforms to public taste. The issue as to whether the public prefers so much provision of service (in terms of adequacy, frequency, speed and so on) at a given level of fare, or some other amount of service at a different level of fare, should always be a matter for consideration. As to what combination of quality of service and money-price should be given, a safe rule might be whatever combination evokes the greatest *volume* of travel. For this is tantamount to saying the combination which the public most prefers, *i.e.*, regards as " cheapest " in the widest sense.

3. Finally, there is the problem arising from the facts that the duration of demand for the services of the crews of passenger vehicles is often substantially less than the consecutive period for which such crews are engaged

and paid for, and that where the guaranteed 7½- or 8-hour day worked continuously has been adopted, this may lead to much comparatively "light" running outside the peak and may prevent those undertakings committed to such arrangements from providing certain services at a profit at all. It goes without saying that anything that would have the effect of reducing this degree of "indivisibility" in a unit of supply (7½ hours worked continuously) would reduce the costs of providing services for periods of less duration. According to circumstances, it is suggested that the following three possibilities might be carefully examined. Each in its way might help to provide more adequate or less costly services at peak periods.

First, should not the terms of agreement between employers and the Unions which govern the proportion of "split shifts" (3–4 hours in the morning and a similar period to meet the evening peak) permitted be somewhat relaxed? Second, should not the possibility of employing drivers and conductors during the second half of their 7½-hour shift on something quite other than driving and conducting, be seriously considered? And these alternative jobs in the valley hours need not necessarily be in connection with the provision of transport. Thirdly, why not offer terms of employment whereby at least a limited number of employees could be employed for one shift of 3½ or 4 hours per day only, and be paid accordingly? "Half-time" jobs are a real attraction to some, especially to women whose employment as conductresses is now so widespread.

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NOTES ON COUNTERVAILING POWER[1]

> "To begin with a broad and somewhat too dogmatically stated proposition, private economic power is held in check by the countervailing power of those who are subject to it. The first begets the second. The long trend towards concentration of individual enterprise in the hands of a relatively few firms has brought into existence not only strong sellers, as economists have supposed, but also strong buyers as they have failed to see. The two develop together, not in precise step but in such manner that there can be no doubt that the one is in response to the other." [2]

Thus does Galbraith introduce the thesis that competition, the only "autonomous regulator" of economic activity, has been superseded largely by what he calls the "countervailing power" of large buyers. The comprehensiveness of the thesis extends far beyond the bounds of industrial enterprise and purports to explain also the structure of distribution, trade unions and agriculture and the changed nature of competition. Americana predominate in the institutional and factual material; but, by implication, the development of countervailing power, in one form or another, is typical of western industrial society.[3] Perhaps the most important aspects of the new phenomenon are its beneficial welfare effects: it promotes, invariably, lower retail prices, greater efficiency, a more productive allocation of resources, a better distribution of income, etc. If even partially correct we have here an important contribution to market theory.

This article examines the concept of countervailing power mainly in a British context. Its incidence on the development and present structure of the distributive trades is assessed in Part I; Part II examines the countervailing function and performance of the Co-operative Movement; and Part III surveys the position in manufacturing industry. Finally, Part IV is devoted to a brief discussion of some of the logical difficulties presented by the theory.

I

The most crucial section of Galbraith's thesis is on distribution. This may be judged partly by the weight of material and example devoted to

[1] The final draft of this article was greatly improved by the comments of my wife and Dr. H. A. J. Green. And certain points concerning the activities of trade associations were suggested to me in conversation with Mr. R. W. Gray of the Board of Trade (Industries and Manufactures Division II).

[2] J. K. Galbraith, *American Capitalism* (London, 1952; Revised Edition, 1957). The revised edition adds only minor amendments to the original thesis in order to answer various criticisms. Unless otherwise specified, all references are to the Revised Edition.

[3] *Ibid.*, pp. 111–14, 126–7 and 141.

retailing; and partly because it is evidently expected that the "mass retailers" will provide the most significant development to offset the market-power of the industrial oligopolist. The forms of organisation which, to Galbraith, are the vehicles of countervailing power in this sphere, are "the food chains, the variety chains, the mail-order houses (now graduated into chain stores), the department store chains and the co-operative buying organisations of the surviving independent department and food stores."[1] The British equivalents are the multiple stores, including the variety chain stores, the department stores and the consumer Co-operatives. It is to be noted that large-scale retailing is more developed in Britain than in the United States in the sense that multiples and Co-operatives account for a larger proportion of retail sales than do their American counterparts.[2] The question which now arises is whether the development of these large-scale retail outlets is a direct reaction to the market power of oligopolistic producers.

On examination it would appear not. We may take the assessment of J. B. Jefferys, perhaps our foremost authority on the development of the retail trades.[3] It seems that *multiples*, the most important of the large-scale retailers,[4] have developed mainly in order to exploit considerable economies of scale open to them through organisational and merchandising techniques. Such economies do include special buying advantages, and there is therefore the beginnings of a case for the countervailing power thesis: the multiples can make large-scale purchases on behalf of all their branches, purchases which carry an appropriate discount; there are also discounts for cash trading not easily available to the small retailer; and there are "special discounts and allowances obtained by negotiation with producers including the right to sell some lines under 'own brand' marks." In this way "a strong buyer in the market can influence the pricing decisions of the producer."[5] On the other hand, the major advantages of size appear to

[1] *Op. cit.*, p. 119.

[2] But not in the sense of "average sales volume passing through individual retail outlets." M. Hall and J. Knapp, "Productivity in Retail Distribution," ECONOMIC JOURNAL, March 1955, p. 801.

[3] J. B. Jefferys, *Retail Trading in Britain 1850–1950* (Cambridge University Press, 1954).

[4] Cf. table on the proportion of total retail sales undertaken by different types of retailer; *ibid.*, p. 73.

Type of Organisation	1900, %.	1910, %.	1920, %.	1925, %.	1930, %.	1935, %.	1939, %.	1950, %.
Co-operative Societies	6·0–7·0	7·0–8·0	7·5–9·0	7·5–8·5	8·5–10·0	8·5–10·5	10·5–11·5	10·0–12·0
Department stores	1·0–2·0	1·5–3·0	3·0–4·0	3·0–4·0	3·5–5·0	4·0–5·5	4·5–5·5	4·5–6·0
Multiple retailers	3·0–4·5	6·0–7·5	7·0–10·0	9·5–11·5	12·0–14·0	14·0–17·0	18·0–19·5	18·0–20·5
Other retailers (by difference)	86·5–90·0	81·5–85·5	77·0–82·5	76·0–80·0	71·0–76·0	67·0–73·5	63·5–67·5	61·5–67·5

[5] *Ibid.*, Appendix C on "The Economic Aspects of Multiple Shop Trading" and pp. 31-2 and 68–9.

originate on the organisational side of the business and not as a function of market power; they follow quite conventionally from the scale of operations of the multiple stores. Following Jefferys' analysis there is, for example, the specialisation of function and increased division of labour made possible by size and centralised control (in general administration, buying, advertising, stock control, shop lay-out and siting, transport, etc.). This is complemented by "standardisation of procedure, practice and method in all branches." There are also advantages in integrating the wholesale and retail functions; lower inventory costs are obtained from a faster rate of stock-turn than is possible in a smaller organisation; and there are the other incidental advantages of size, such as the spreading of risk over a large number of retail outlets, ready finance for hire-purchase credit, for spot purchases of useful shop-sites, etc.

In all this it is difficult to see the greater bargaining power of the multiple firm as anything other than one more by-product of size. It certainly would strain the principles of inductive reasoning to interpret it as the prime object of the growth of the multiples.[1] A further point confirms: amalgamation, one of the main routes to large size among multiples (and currently much in operation) apparently takes place for such diverse reasons as an increased specialisation of management functions, economies of buying and transport, an economic acquisition of a set of attractive shopping sites or for the purely financial gains involved in taking over another company's assets and recapitalising the firm.[2]

The *variety chain stores* (which, however, account for only 20% of the sales of all multiples) appear to offer more scope for an exercise of countervailing power. A well-known feature of their policies is the establishment "of close links with and the making of bulk purchases from producers." Organisations like Marks and Spencers Ltd. "give assistance and advice to their suppliers even to the extent of helping the firms mechanise, lay out and extend their factories and purchase the raw and semi-finished materials used by their suppliers."[3] And it is on record that the policies of the variety chain stores, on one occasion at least (and with the help of competition from Japanese imports), compelled one oligopolised industry to produce a specially branded, cheap commodity for exclusive retailing through these stores.[4] This looks promising. Unfortunately, Jefferys also states quite firmly that "the success of this form of retailing was not dependent to any great extent upon the development of large-scale production . . .; it was more the outcome of the application of large-scale retailing to the distribution of a wide range of physically small, low-priced, near-

[1] J. B. Jeffreys, *Retail Trading in Britain 1850–1950* (Cambridge University Press, 1954), pp. 11 and 464. For countervailing power to be exercised the interests of the large-scale retailer must be distinct from those of the manufacturer. In fact, vertical integration is common among multiples in such important trades as men's clothing, footwear, confectionery, groceries and chemists' goods.

[2] *Ibid.*, pp. 73–6.

[3] *Ibid.*, p. 71.

[4] Monopolies Commission report on *Electric Lamps* (H.M.S.O., 1951), Chapter 8.

essential goods." And he mentions the very large number of separate producers who supply goods to any one variety chain store.[1] That is, merchandising technique and not large-scale bargaining is the basis of this form of retail organisation.

Finally, the development of *department stores* presents an analogous picture. Briefly, this method of trading " did not depend on the existence of large-scale methods of production; its success lay rather in the co-ordination of supplies from a large number of producers and provision of a much wider selection and range of goods, and more attractive shopping conditions, than could be offered by competitors." [2]

Evidently, great ingenuity would be required to fit the principal factors in the development of our large-scale retailers to the requirements of Galbraith's thesis. And it is significant that the possibility of growth for the sake of countervailing power has never occurred to Jefferys and other students who have given considerable attention to the minutiæ of the distributive trades. But perhaps the most devastating weakness is yet to come. The other side of this model hardly exists: the oligopolists, in reaction to whom the large-scale retailer is supposed to evolve, are very thin on the ground. Mention has already been made of the large numbers of producers who supply department and variety chain stores; and an analysis of the individual trades in which large-scale retailers as a group have had most success demonstrates a similar pattern. These are the trades: the footwear trade (with 61 % of total national retail sales by 1939), the women's wear trade (47 %), grocery and provisions (47 %), the dairy trade (47 %), chemists' goods (42 %), men's clothing (42 %) and furniture and furnishings (39 %).[3] Now there is some concentration of production in the chemists' goods trade; otherwise, if we except certain individual items, such as cocoa, sugar, condensed milk and margarine, there is no significant concentration among the producers of this group of commodities.[4] Indeed, the production of footwear, clothing, furnishing and farm produce come close to being text-book examples of small-scale competitive industry. By contrast, " large-scale retailing made relatively little headway in the trades where production was concentrated in the hands of a few firms or where the products were nationally advertised, branded and resale price maintained, for example, tobacco and cigarettes, chocolate and sugar confectionery, certain grocery goods and electrical goods of various descriptions." [5] The thesis that the motive-force behind the growth of large-scale retailing is the need to countervail the large-scale producer receives no support from British conditions.

[1] *Op. cit.*, pp. 70–1.

[2] *Ibid.*, p. 87; also pp. 32–4 and 60.

[3] *Ibid.*, pp. 74–6.

[4] Cf. Leake and Maizels, " Structure of British Industry," *Journal of the Royal Statistical Society* 1945, Parts I–II, and the *Census of Production 1951*.

[5] Jefferys, *op. cit.*, pp. 97.

II

Among large-scale retailers there is one more candidate for the role of countervailer—the Co-operatives. They deserve special attention: first, because Galbraith specifically observes of them that in Britain (and in Scandinavia) the consumers' Co-operative, rather than the chain-store, is "the dominant instrument" of countervailing power in the consumers' goods market.[1] Secondly, because the Co-operative technique is different. The main countervailing effort is not made in negotiations with large-scale suppliers. Instead, the movement attempts to have an indirect effect on the market power of oligopolised private enterprise through an organisation, owned and operated by consumers themselves, which competes by offering an alternative source of supply for most ranges of consumer goods, together with a separate system of retail outlets.[2]

One can appreciate that, theoretically, such a structure comes close to being an ideal for Galbraith's purposes. But close examination of practice reveals that the movement, rather than exploiting an advantageous position, has, on the contrary, neglected its opportunities for exercising countervailing power.

For example, although the Co-operatives initially had a resounding success by establishing themselves as suppliers of a high standard of quality in food and household stores, they failed to maintain the initiative as other classes of goods came within the reach of working-class incomes. The percentage share of the Co-operatives in total national retail sales rose from 6% to 12% over the period 1900–50. But if we examine the structure of sales by 1950 we find that in only one commodity group do the Co-operatives secure a share higher than the 12% for total sales: the *food and household stores* group accounts for 16–18% of total national retail sales. In other commodity groups the shares are distinctly poorer: *clothing and footwear*, 8·0–9·5%; *reading and writing* and *confectionery goods*, 5·0–6·5%; and *other goods* (a large and nowadays important group including chemists' goods, furniture and furnishings, electrical goods, bicycles, hardware, pottery, glass, etc.) runs at 4·0–5·0% of total national retail sales.[3] It seems that the Co-operatives, ensconced in the traditional grocery and food businesses, have found difficulty in entering the durable-consumer-goods trades. Hence the rate of growth of the Co-operatives markedly decreases after 1920 and, significantly, compares badly with that of the rapidly expanding multiples.[4] Most commentators account for this phenomenon by pointing out strong conservative characteristics stemming from the egalitarian nature of the

[1] Galbraith, p. 126.

[2] A. M. Carr-Saunders, P. Sargant Florence and R. Peers, *Consumers' Co-operation in Great Britain* (London, 1942) gives the most scholarly and impartial account of the British movement. *Vide* also J. Bailey, *The British Co-operative Movement*, and M. Digby, *The World Co-operative Movement* (London: Hutchinson's University Library).

[3] Jefferys, pp. 73–80.

[4] *Vide* table *supra*, p. 90.

movement in this country.[1] Whatever the cause, it is clear that the Co-operatives, operating on this very restricted commodity base (three-quarters of the turn-over consists of food sales alone), cannot hope for an effective exercise of countervailing power. The concentration of production lies elsewhere.[2]

Secondly, consider the movement as a price-competitor. One would expect Co-operatives to play a leading part in introducing price-cutting—either in a general campaign or in selected ranges of goods—thus exerting pressure on private-enterprise markets on behalf of the consumer. With independent sources of manufacture and supply, as well as its own retail outlets, the organisation is ideally equipped for this role. In practice, the Co-operative Societies, and the movement as a whole, almost unanimously avoid such a policy. They prefer to charge " market-determined " prices (*i.e.*, determined by private enterprise) and concentrate on paying the highest possible dividend.[3] Evidently, they are firmly of the opinion that the dividend is the " most important factor in maintaining the trade of customers." [4] And the movement is not prepared to abandon the certainty of one set of customers for the shifting loyalties of a competitive market. This attitude is persistently held, despite the fact that a " fighting " policy offers the only method of maintaining a rate of expansion which will parallel the growth of the multiples. Where branded and resale-price-maintained goods of outside manufacturers are sold through retail societies this attitude is repeated. The Co-operatives are prepared to sell such goods at the manufacturer's price even where, as in tobacco and chemists' goods, the resale prices are determined by a monopolistic group or a trade association enforcing a price-ring. The only objection the movement has felt compelled to make are in those cases where outside manufacturers withhold their goods on the grounds that the Co-operative dividend is a form of price-cutting; or where supplies are made available only on the condition that the dividend is withheld in respect of the price-maintained goods. This type of action is denounced as " infringing Co-operative principle." But on the practice of resale price maintenance itself the Co-operatives have never taken a stand on principle. Indeed, through a passive acceptance of the practice and some of its benefits, the Co-operatives may be said to have favoured it.[5] Altogether, the record shows a marked absence of positive action in the price-competition field.

Thirdly, the Co-operative movement can hardly commend itself to consumers as a militant " trust-buster." It is true that the major part of the

[1] Carr-Saunders *et al.*, *op. cit.*, Chapters 20–9.

[2] *Ibid.*, pp. 480–2; and Bailey, *op. cit.*, p. 40.

[3] Carr-Saunders *et. al.*, *op. cit.*, Chapters 5, 12, 27 and 29; and Jefferys, *op. cit.*, pp. 57–8.

[4] Carr-Saunders *et al.*, *op. cit.*, p. 478.

[5] B. S. Yamey, *The Economics of Resale Price Maintenance* (London, 1954), pp. 83–6. On the other hand, the Co-operatives do attempt to promote their own products as alternatives wherever possible.

Co-operative market for certain commodities is supplied by Co-operative factories (soap, preserves, margarine, footwear, cycles and men's clothing, for example) or imported from Co-operative organisations abroad.[1] But in few industries is the share of the Co-operative plants very high; flour-milling, with a 25% share, is exceptional. Exceptional also is the concern which Co-operative competition has caused, on occasion, in relatively concentrated industries such as soap and margarine.[2] This failure to press production in concentrated industries is the more surprising when it is noted that, as well as possessing their own retail outlets to guarantee disposal of goods, the wholesale societies invest as much as 75% of their available capital *outside* of the movement [3] in securities and equities of various kinds. It is true that some considerable liquidity is desirable (customers' shares are withdrawable on demand), but this figure is, by most commercial and banking standards, incredibly conservative. If, as the Co-operative credo appears to imply, there is a special obligation on the movement to protect the consumer from "monopolistic exploitation" the will to use these resources should be found. There are a number of industries which currently deserve the attention of militant co-operators—detergents, processed milk products, tobacco, sugar-refining, household electric goods, petroleum distribution, etc.—all of them well within the technical competence of the wholesale societies. But the gage is not taken up and is not likely to be. On the contrary, the wholesale societies, it appears, prefer to make life less arduous by finding some *modus vivendi* with monopolists and oligopolists.[4]

Thus, Galbraith's vision of an embattled movement fighting big business on behalf of the consuming public is, at best, a very small part of the truth.[5] The existence of a Co-operative movement does not, in itself, guarantee the exercise of countervailing power.[6]

III

The evidence for a development of countervailing power in the distributive trades in Britain is poor. However, where one does find examples of its exercise is in inter-industry and inter-firm transactions—mainly within

[1] About two-thirds of the supplies to retail societies have a Co-operative origin. On the other hand, it is calculated that allowing for the value of bought raw materials the "value-added" element contributed by Co-operative production, British and foreign, is as low as 19·3% (Carr-Saunders *et al.*, *op. cit.*, pp. 409–11).

[2] Cf. Charles Wilson, *History of Unilever*, Vol. I, pp. 118, 124, 278 and 303, and Vol. II, pp. 175 and 291.

[3] Carr-Saunders *et al.*, *op. cit.*, Chapter 25.

[4] *Ibid.*, p. 494.

[5] In particular, see the conclusions of Carr-Saunders, Florence and Peers on the performance of the movement in this respect, pp. 521–2.

[6] Swedish experience has differed. The Kooperativa Forbundet developed in a more concentrated economy from a smaller number of consumer societies and was fortunate in finding a strong, imaginative leadership prepared to pursue the ideals of the movement (Anders Hedberg, *The Swedish Consumer in Co-operation* (Stockholm, 1937); also *Co-operative Sweden Today*, by J. W. Ames).

manufacturing industry. Galbraith devotes only two paragraphs of his book to countervailing power in " producers' goods " markets, preferring to highlight the more conspicuous cases of the consumers' goods markets. But he does provide in passing what is probably the correct explanation of the occurrence of the phenomenon: he notes that the manufacturer of producers' goods cannot count his customers in thousands but possibly, his important ones, only in dozens or less.[1] And it may happen that the firms of a concentrated industry find themselves in the position of selling a large part of their output, perhaps the main part of it, to the few members of an equally concentrated industry. In such circumstances the buyers can play off sellers one against the others. They can go " from one manufacturer to another breaking down their prices. They may get a low price from one company short of work; the next company would be told that if they wanted a contract they must quote equally low or go without." [2] For example, we find in the tyre industry that the prices of " original equipment " tyres sold to the motor industry are decided in this way by the car manufacturers themselves, and not by the five main tyre manufacturers, who supply 95% of this trade. Depending on the buying of the purchaser, discounts of anything from 40 to 60% of the retail price are secured by individual car manufacturers. And the profit on this class of trade is small and often negative for the tyre firms.[3] In the electronic valve and tube industry, effectively concentrated in four firms, manufacturers are compelled to sell " first equipment " radio valves and television tubes, with discounts ranging from 60 to 80%, to the manufacturers of radio and television sets. The trade operates a price-fixing arrangement for the majority of its products, but " the prices charged to the larger makers of equipment . . . cannot effectively be subjected to any price control ": there is " intense competition between the valve manufacturers for the business of the bigger set manufacturers "; consequently, " prices offered are frequently insufficient to cover the costs of production and sale." [4] And in the non-ferrous metals industry, which itself is only mildly concentrated, the trade association complains that the industry is subject to the pressure of " powerful buying units in the electrical, motor and engineering industries and others grouped together into powerful buying organisations which negotiate terms collectively "; or it is subject to the potential competition of customers who have the technical competence and resources necessary for going into the manufacture of non-ferrous components for themselves.[5]

[1] *Op. cit.*, p. 123.

[2] Monopolies Commission, *Electrical and Allied Machinery and Plant*, Chapter 32, para. 716; evidence of manufacturers relating to the buying power of the Central Electricity Authority and the Area Boards.

[3] In contrast to the export and replacement trade which were price-fixed and otherwise controlled. Monopolies Commission, *Pneumatic Tyres Report*, paras. 169–78, 463 and 193–200.

[4] The profits of most firms are made on the sale of " maintenance " valves to wholesalers and repairers. *Electronic Valves and Tubes*, paras. 118, 132 and 193–200.

[5] Monopolies Commission, *Semi-Manufactures of Copper*, paras. 83–4, 268–9 and 301–2.

Then, unexpectedly perhaps, the growth of nationalised industry and the development of certain government departments has centralised a number of purchasing interests, and thus extended the area of manufacturing industry in which countervailing power may be exercised. We know, for example, that in the domestic market of the heavy electrical industry the Central Electricity Authority buys 73% of all mains cables, 78% of heavy generating equipment and 60% of heavy transformers; that the G.P.O. buys 90% of telephone and telegraph cable and (with the Admiralty and Cable and Wireless Ltd.) 100% of submarine cable; and that the Ministry of Health is now indirectly the main purchaser of the products of the pharmaceutical industry.[1] To these we must add the purchasing activities of nationalised gas, railways, the airways corporations, the Ministry of Supply and the Atomic Energy Authority, the Admiralty, etc.

Thus it appears that genuine cases of bilateral oligopoly do occur; and they seem, in most cases, to benefit the ultimate consumer by keeping down the level of price and stimulating the efficiency of the countervailed industry.[2] Further, if we can take the industry reports of the Monopolies Commission as representing a fair cross-section of manufacturing industry, cases occur frequently enough to merit special consideration. On the other hand, it must be said firmly of these bilateral oligopoly situations that the countervailing powers of the buyers did *not* develop, *à la* Galbraith, in direct response to the concentrated market power of the suppliers. To look at our examples once again: the motor industry certainly is concentrated; but its concentration is adequately explained by the economies of scale which large size gives to an assembly industry of this character.[3] A set of tyres is, after all, only 3–5% of the cost of even a moderately priced car. Similarly, the structure of the radio industry is defined by production possibilities rather than the

[1] *Insulated Electric Wires and Cables, Electrical and Allied Machinery and Plant* and *Insulin*.

[2] See the reports quoted and p. 101 n. 2 below. On consumer welfare there is one ambiguous point, however. Occasionally the countervailed industry compensates for the zero or negative profits on sales to strong buyers by fixing higher prices to other groups. Thus the customer has cheaper motor cars and television sets, but the *replacement* of tyres and electrical components, of electronic valves and cathode-ray tubes is maintained at much higher prices and margins. Whether the balance of the public interest lies in cheaper original prices, a faster turnover of goods and therefore a greater scale of output for the industry, or in cheaper replacement prices and therefore a longer life of the good, is not clear at this stage. Probably it depends on the precise circumstances. In practice, the Monopolies Commission prefers not to interfere in these commercial arrangements of the industry; except, of course, to recommend prohibition of any collective discrimination or enforcement against the weaker group of customers which may assist, indeed make possible, such price discrimination.

[3] The buying advantages of the motor industry, taken in the aggregate, for such components as radiators, electrical equipment, body assemblies, etc., are not to be despised. Indeed, they have become essential to the industry; depending on the manufacturer, 56–78% of the value of the finished vehicle consists of "bought-out" components. But these advantages *follow* from the scale of operations rather than create them; and they are more likely to be directed against small-scale than large-scale industry. (*Vide* P. W. S. Andrews and E. Brunner, *The Life of Lord Nuffield* (London, 1955), Part III, Chapter IV; and P. E. P., *Engineering Report II: Motor Vehicles*, Chapters 2, 3 and 10.)

need to bargain with the valve and tube manufacturers, even although valves are 15% and tubes 35% of the factory cost of radios and television sets.[1] And in the case of the non-ferrous-metals industry it seems that the concentration of buying-power which it faced had *preceded* and gone farther than its own concentration—of selling power—a development which evidently gave rise to a sense of grievance, but which was clearly determined by the technology of its main customer-industries.[2] Finally, the centralisation of buying power in the hands of the nationalised industries and government departments cannot really be classified except as one of the incidents of British political life.

One is forced to conclude that, however useful and desirable countervailing power may be, its incidence on manufacturing industry is, from the economic point of view, erratic and unpredictable.

IV

It would appear that the theory of countervailing power obtains but thin empirical support from British conditions in the manufacturing and distributive trades.[3] And, lest this absence be considered a reflection of decadent British economic organisation, it should be noted that serious deficiencies of a similar nature have been found in relation to United States conditions.[4] Nevertheless, the idea that there is a tendency for concentrated market power to be countervailed by forces from the other side of the market succeeds in securing some support from common sense and experience; the thesis is put forward most plausibly by Professor Galbraith; and it would be surprising if a complete book had been written on a concept with no substance at all. But there is a lacuna somewhere between practice and theory; and to get at its nature a closer examination of the internal structure of Galbraith's model is required.

The essence of countervailing power is contained in the spontaneous

[1] Indeed the valve industry is the more concentrated of the two. But in competing for the custom of the larger set makers the valve and tube manufacturers have become the victims of their own efficiency: low-cost production has become very closely geared to long runs of standardised work in this industry. Thus buying power is the outcome of a technological accident not industrial concentration (*Electronic Valves and Tubes*, paras. 193–200 and 223–30).

[2] *Copper Semi-Manufactures Report*, Chapter 10 especially, and Hunter, "The Monopolies Commission and Price-Fixing," ECONOMIC JOURNAL, December 1956, p. 591.

[3] Galbraith also places great emphasis on the role of countervailing power in stimulating trade-union organisation. "As a general rule there are strong unions only where markets are served by strong corporations" (*op. cit.*, pp. 114–15). Even the most superficial knowledge of trade-union history fails to bear out this analysis. British trade unionism was originally craft unionism (engineering, shipbuilding, printing, *e.g.*); later spreading to coal-mining, metals, textiles and footwear. None of these were ever particularly concentrated industries. And eventually the most powerful unions came to be the engineering and "general" unions, which secure their strength from a coverage of a variety of trades—not from organising one particular industry.

[4] Cf. George J. Stigler, "The Economist Plays with Blocs," *American Economic Review*, May 1954 Proceedings); and J. P. Miller in the same issue.

and often inevitable concentration of weak buyers (or sellers) when confronted with the established, "original," power of strong sellers (or buyers). This concentration may occur through the ordinary processes of growth and amalgamation until a roughly bilateral oligopolistic situation is developed. It is this theoretical situation that Galbraith, so far as one can tell, usually discusses.[1] But to judge from his examples, he also has in mind the growth of countervailing power in a much wider range of market situations and industrial structures. He mentions the unorganised bargaining power of the small-scale building industry *vis-à-vis* trade unions;[2] the development, with or without government support, of trade unions to counter the bargaining power of employers; and the formation of consumer co-operatives to by-pass, rather than bargain with, large-scale suppliers.[3] More unexpected still, we find direct intervention by the Government in agricultural markets to provide support prices for farmers; and state regulation of wages in those industries which have not succeeded in establishing satisfactory negotiating machinery. The spontaneity of countervailing power, it appears, is not necessarily a market phenomenon: political lobbies and the legislative process may also provide the means whereby "disadvantaged" groups assert their economic interests against strong market positions.[4] Thus, stated in its most general form, countervailing power becomes *any* strengthening of weak-market positions in almost any circumstances.

One could argue simply that here we have a series of propositions on such a level of generalisation, and applied to such a mixture of situations, that they are not susceptible to a uniform analytic treatment and cannot yield precise results. That is, the concept is not operationally meaningful. But more concrete criticisms are available.

First, if our interpretation of the nature of countervailing power is correct, and it seems the most reasonable interpretation, then it can be shown that Galbraith arbitrarily ignores certain classes of countervailance. For the sake of completeness he should add to his examples the activities of certain manufacturers' and distributors' associations formed to improve the market position of their members, *vis-à-vis* other groups, by restricting competition. To take examples from British practice (and there are abundant American examples[5]) we have the London Building Conference, which organised a level-tendering arrangement mainly to eliminate "excessive

[1] *Vide* pp. 111 and 137–8 and background Chapters I–VIII.
[2] *Ibid.*, pp. 124–5.
[3] *Ibid.*, pp. 126–7.
[4] *Ibid.*, pp. 136 and 152 and Chapter X on "Countervailing Power and the State."
[5] See *T.N.E.C. Monograph No. 21* (United States Government, 1941) for numerous cases of manufacturers' and distributors' associations which enforced regulations and boycotts on one another to control margins, to assert the right to handle goods exclusively, to regulate the price paid for raw material or component supplies, etc. "In all of these cases association members have employed the boycott as a means of enforcing outsiders to conform to programs which they have adopted in their own interests" (pp. 224–58).

competition" and "the domination of building owner and architect" in this market, and thus secure "a reasonable return" to the trade.[1] Then there is the British Non-Ferrous Metals Federation, whose members organise extensive price-fixing arrangements for most groups of product in order (*inter alia*) to "protect themselves against the pressure of powerful buyers."[2] And there are numerous distributive associations who operate "exclusive buying" arrangements (agreements to buy only from named firms) "as a protection for the small distributor against a large and powerful supplier or group of suppliers" or to negotiate favourable terms from a powerful manufacturers' association.[3] Clearly, these activities constitute attempts of relatively weak buyers and sellers to improve their market positions. But it is a serious reflection on Galbraith's concept that they are also cases of restrictive practices; that the majority were found to operate against "the public interest" by keeping prices and margins unnecessarily high, protecting inefficiency, etc.; and that all are now presumed illegal under the *1956 Restrictive Trade Practices Act*.[4]

Secondly, it is not clear, even in the most favourable cases, that the exercise of countervailing power will necessarily increase economic welfare. Take the emergence of bilateral oligopoly. Galbraith shows convincingly enough, what we have noted already, that an oligopsonist is in a position to drive down the oligopolists' prices.[5] The difficulty is to see why the oligopsonist should pass on his gain to the ultimate consumer. This is crucial. On the basis of existing theory one would assume that bilateral oligopoly will do no more than redistribute gains between oligopolists and oligopsonists.[6] Galbraith has two answers to this point. The first is that the mass buyers, chain stores, variety stores, etc., are anxious to increase their volume of sales: profits are a function of output for them, and a low level of prices is regarded "as the major device for obtaining and maintaining volume."[7] The second answer—an afterthought in response to criticisms of his book and incorporated in the revised edition—is that although the "mass buyers" are oligopsonists on the buying side, they remain subject to intensive competition from other types of retailer on the selling side, and are therefore compelled to pass on their gains in the form of lower prices.[8]

Unfortunately, no evidence is offered that either of these two effects operate generally. Conceivably, the output factor could have the effect Galbraith ascribes to it during periods when the size of the retail market is

[1] *London Building* report, paras. 180–3, on the origins of the association.
[2] *Copper Semi-Manufactures*, paras. 266–71, on the need for price regulation.
[3] *Collective Discrimination*, Cmd. 9504/1955, Chapters 4 and 6.
[4] 4 & 5 Eliz. 2, Chapter 68, Section 21 on the "Presumption as to the Public Interest."
[5] Galbraith, *op. cit.*, pp. 120–1, and the reports quoted in III above.
[6] Cf. George J. Stigler, *op. cit.*, p. 9.
[7] Galbraith, Original Edition, pp. 123–4.
[8] J. K. Galbraith, "Countervailing Power," *American Economic Review*, May 1954 (Proceedings), pp. 3–4; and pp. 117–18 in the Revised Edition.

rapidly increasing. Equally conceivable is a static or contracting market, in which further economies of scale are not to be found and there is no incentive to pass on the gains in low prices. The second line of defence—that the oligopsonistic mass buyers are subject to intense competition on the sales side—Galbraith would have been wiser to omit. If accepted, it is only reasonable to suppose that the same competitors must also be encountered in buying activities. And this conclusion inevitably suggests that the large-scale retailers are never oligopsonists except perhaps in a few specialised lines of product; that they are not therefore in a position to control oligopolistic producers; and that their market power merely consists of the familiar advantages of large-scale buying [1] in a competitive market. In any event, these welfare arguments are developed only for the mass distributors in whom Galbraith places so much faith; it is not shown why the industrial oligopsonist must pass on his gains. In certain circumstances this effect will occur in manufacturing industry. For example, the motor industry appears to be oligopsonistic in character when buying one component of uniform quality—tyres—within the domestic market. It is undoubtedly a much more competitive industry when selling a variety of types and qualities—cars and light commercial vehicles—in what is an international market. Again, it can happen that the oligopsonist is a nationalised industry, and will therefore pass on the benefit of its bargaining power to the consumer.[2] But it is obvious that these examples are no more than the accidents of market and industrial structure; it cannot be shown that they are automatic in their appearance. And, to take the alternative, one can hardly base an important welfare theorem on the assumption that oligopsonists are altruistic.

Thirdly, it is a source of confusion for the reader of Galbraith's book that when countervailing power is exercised by what may be called general interest groups, it becomes a welfare principle that the gains are *retained* and not passed on to the ultimate consumer! The organisation of trade unions to bargain with employers or the successful lobbying of farmers to raise agricultural prices are cases in point.[3] This is a serious inconsistency. Even if we leave the inconsistency aside, it is difficult to see why this form of redistribution of income, in favour of particular interest groups, necessarily increases economic welfare. In a society which, broadly, favours a greater degree of equality of income the organisation of groups " disadvantaged "

[1] Cf. above p. 90.

[2] Galbraith would have been on more solid ground had he emphasised the greater efficiency generated in countervailing power situations. The oligopolists who are confronted by strong buyers now have the benefit of specialised production and long runs of work; also, they are likely to be subject to pressures to conform closely to quality and design specifications, to use up-to-date methods of production, to have their works costed by independent accountants to determine a fair basis for price negotiation, etc. (Cf. Monopolies Commission reports on *Electric Cables*, *Electrical and Allied Machinery*, *Copper Semi-Manufactures* and *Industrial and Medical Gases*.)

[3] Galbraith, *op. cit.*, pp. 115–16, 136–7 and 152.

by weak market positions is likely to be acceptable. But one would hesitate to state a general theory along these lines. At what point in a series of successful operations does the " disadvantaged " group pass into the ranks of the " advantaged " ? To be concrete, does the bargaining power of the National Union of Mineworkers always operate in the public interest? Are the successful lobbying activities of the National Farmers' Union or the British Medical Association always to be regarded as increasing economic welfare? Galbraith does not enlighten us on this point. Indeed, it is difficult to see that he could, since no existing welfare theory can demonstrate that the successes of one interest group operate to the general advantage. One is left with the impression that any form of institution or organisation designed to strengthen weak market positions earns his uncritical approval. But it would be fallacious to suppose that comprehensive organisation into economic interest groups is a universal panacea for inequality. In Stigler's trenchant phrase, " we should encounter new inequities in income distribution which would affront our sensibilities quite as much as any we can find now." [1]

It is becoming clear that most of these internal difficulties revolve around the welfare implications of the concept—what countervailing power is expected to do. Prima facie, Galbraith is concerned to demonstrate that the benefits of countervailing power are the orthodox welfare effects. It operates, he says, " in the right direction " to reduce monopoly returns, to give lower prices, larger outputs and a more desirable use of resources.[2] More generally, it replaces competition as " the autonomous regulator of economic activity " in a world of oligopolies and monopolies.[3] But a second reading of *American Capitalism* brings out the variety of situations, extending quite out of the market at times, which countervailing power encompasses; and a corresponding variety of " welfare " effects many of which clearly do not fit into accepted welfare systems and which are mutually incompatible. Galbraith himself, in later writings, admits to a modicum of confusion: " I fear I did not make as explicit as I should the welfare criteria I was employing." And he goes on to say that although " increased real income of consumers is the simplest test of improved welfare " we now " regularly reject " this standard and " regularly accept measures which raise product prices to ameliorate the grievances or alleviate the tensions of some social group. An opulent society can afford to sacrifice material well-being for social contentment." It appears that his criterion is not the welfare of consumers but " the minimisation of social tension." [4] This is a surprising tailpiece to find on an economic theory; and almost certainly it is a criterion which creates more problems than it solves.

[1] *Op. cit.*, p. 14.
[2] Galbraith, p. 170.
[3] *Ibid.*, p. 112.
[4] Galbraith, *American Economic Review*, p. 3, and *American Capitalism* (Revised Edition), pp. 146-7.

V

The most equitable interpretation of Galbraith's book is that he is arguing for equality of bargaining power as a desirable social and economic norm. One can go some considerable distance with him and agree that there is much to be said for certain institutional developments such as a more militant Co-operative movement to provide a check on big business or an intelligent use of countervailing power as an instrument of monopoly control.[1] And, of course, no one seriously objects to the statutory powers of trade unions to control the supply of labour and thus offset an otherwise serious bargaining disadvantage. But these are personal and political value judgements: acceptance of them involves no commitment to Galbraith's positive theory.

That is, on the scientific level it must be concluded that the countervailing-power thesis has no solid claim to theoretical status: demonstrably, the empirical basis is lacking and the internal consistency of the welfare theorem is poor. Indeed, there is serious doubt that countervailing power is primarily of the material of economic theory. On the desirability of pressure groups to offset weak market positions the economist cannot be the main authority; and the assessment of such forces in terms of "the minimisation of social tension" seems to be a task for other disciplines. The economist can be sure of only this: that countervailing power is but occasionally and fortuitously a product of market forces.

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[1] In fact, the Monopolies Commission has so advised the use of countervailing power in certain of its recommendations (cf. Hunter, "The Monopolies Commission and Economic Welfare," *Manchester School*, January 1955). And in the *1956 Restrictive Trade Practices Act* provision is specifically made for the exemption of agreements, otherwise restrictive, if they are "reasonably necessary —to negotiate fair terms" with oligopolistic or monopolistic buyers or suppliers. (4 & 5 Eliz. 2: Section 21.)

BRITISH INTER-INDUSTRIAL EARNINGS DIFFERENTIALS, 1924–55

UNDER full employment it is desirable to achieve the best possible distribution of labour. Discussions such as that of Flanders[1] have sought to determine wages nationally in order, *inter alia*, to encourage labour into the industries which, in the interests of national economic goals (be they exports or productivity), need expansion. There does not seem to be much evidence that wages, one of the several important factors determining the movement of labour, have in fact contributed to any redistribution of labour under full employment. Although labour turnover is very high (as Ministry of Labour figures show), the net mobility of labour is almost zero. So far, little attention has been given to the question of how far the present wage structure encourages any redistribution of labour between one industry and another.

Recent work on wage differentials in this country has tended to concentrate on investigating differentials between skilled and unskilled workers. Knowles and Robertson,[2] for example, have worked on these differences over the period 1888–1950. One of the general conclusions that they come to is that differentials have tended to narrow under full employment.

Another study that supports this view, but with regard to inter-industrial differentials in America, is that of Donald Cullen.[3] "In spite of the several apparent inconsistencies in the cyclical variations of this wage structure, a generalisation might still be hazarded that inter-industry differentials have tended to narrow during periods of prolonged full employment (the 1940's, at least until 1947) and to widen during periods of very severe unemployment (1921 and 1929–1933)." The same conclusion is drawn from a brief comparative study of British and American inter-industry differentials under full employment.[4]

The general purpose of this study therefore is to test whether this conclusion, that is, of a narrowing of wage differentials under full employment and, as a corollary, a widening of them during periods of unemployment, is reasonable when applied to a longer period in the United Kingdom.

[1] Allan Flanders, *A Policy for Wages* (Fabian Society, 1949).

[2] K. G. J. C. Knowles and D. J. Robertson, "Differences Between the Wages of Skilled and Unskilled Workers, 1888–1950," *Bulletin of the Oxford Institute of Statistics*, Vol. 13, No. 3, April 1951, pp. 109–27, and *ibid.*, "Earnings in Engineering, 1926–48," June 1951, pp. 179–200.

[3] D. E. Cullen, "Interindustry Wage Structure," *American Economic Review*, Vol. 46, No. 3, June 1956, pp. 353–69. This article contains a full bibliography on the subject of inter-industrial differentials.

[4] Pamela Haddy and N. Arnold Tolles, "British and American Changes in Inter-industry Wage Structure under Full Employment," *Review of Economics and Statistics*, Vol. 39, No. 4, November 1957.

The period we chose for this purpose, 1924–55, includes both slump and full employment. We divided the workers covered into four groups—men, women, boys and girls, as used by the Ministry of Labour. The question resolves into two parts, the structure of wage differentials and the amount of differences between the average earnings of workers in different industries. We only consider the latter question here after looking briefly at another aspect of differentials, those of sex and age.

Sources and Methods

This study is based on the average weekly earnings of all workers, men, women, boys and girls, in various industries selected from the earnings inquiries published (now at half-yearly intervals) in the *Ministry of Labour Gazette*.[1] For the years 1924, 1928 and 1931 the figures available are for all workers, males and females. In 1935 and succeeding years figures are given for youths and boys under twenty-one and for girls under eighteen. Where figures are given both for firms with more than ten employees and and for all firms, including those with less than ten employees, the former category has been used in this study, since the more comprehensive information was not available for all years. No figures were available for 1938. They were therefore calculated on the basis of the percentage increase of October 1947 over 1938. With the exceptions of 1942 (when July figures were used) and of figures for Railway Conciliation and Shop and Artisan grades (when the figures available were for March in each year), the month used throughout the Ministry's inquiry was October. There was thus little possibility of seasonal variations in employment influencing the results.

Earnings were used in preference to wages, as earnings are more responsive to changes in the economy. Earnings, moreover, more directly influence the workers, for they are somewhat closer to their "take-home" pay. Average weekly earnings are the gross earnings, *i.e.*, "total earnings, inclusive of bonuses, before any deductions in respect of income tax or of the workers' contributions to the national insurance schemes." [2]

It is estimated that approximately two-thirds of the total number of wage-earners employed in the industries concerned at the time of the inquiry are covered. The proportions of workers covered varied in the different industries, and "in some cases were much more and in others less than two-thirds. The survey was applied to manual wage-earners employed in

[1] Details of the years used in this study and of the issues of the *Ministry of Labour Gazette* which supply the relevant information of average weekly earnings are as follows: 1924 — June 1926, August 1926, September 1926, December 1926, and January 1927; 1928—November and December 1929; 1931—January 1933; 1935—April 1937; 1938—From figures for 1947, given as a percentage increase on those of 1938 in April 1948; 1942—December 1942; 1947—April 1948; 1951—March 1952; 1955—March 1956.

[2] *Ministry of Labour Gazette*, Vol. 64, No. 9, September 1956, p. 325.

manufacturing industries generally, and in a number of the principal non-manufacturing industries, in the United Kingdom." [1]

Industry descriptions over the period 1924–55 were not always consistent, and some variation in the number of industries used from year to year was unavoidable. Over the period 1947–55, industries whose descriptions were roughly the same were usually used. This was not possible for the earlier periods when some of the industries did not exist, and in the later period classification became more detailed. Some change in composition of an industry group was inevitable over a twenty-year period. For example, in 1951 one industry group was termed " Soap, Candles, Glycerine, Polishes, Ink and Matches " and in 1928 " Soap, Candles, Oil and Tallow."

Inter-industry differentials in earnings were interpreted as the dispersion or spread, and so we calculated the coefficient of variation for the average weekly earnings figures in the industries selected, thus avoiding the need for adjustments because of changes in the value of money. For each age group (all workers, men, women, and where possible girls and boys) and for each year, the standard deviation of the sixty average weekly earnings figures in each of about sixty different industries was divided by the mean of the average weekly earnings in the total number of industries used, and the result expressed as a percentage.

Sex and Age Differentials

Since our statistics were divided into four categories of age and skill, we took the opportunity of first looking at the movement of the average earnings

[1] *Op. cit.* The descriptions of the industries in the 1955 inquiry which we used are as follows: Iron Ore Mining and Quarrying; Stone Quarrying and Mining; Other Mining and Quarrying; Clay Sand Gravel and Chalk Pits; Coke Ovens and By-product Works; Cement; Glass Containers; Soap, Candles, Glycerine, Polishes, Ink and Matches; Paint and Varnish; Explosives and Fireworks; Iron and Steel Melting, Rolling, etc., not elsewhere specified; Blast Furnaces; Tinplate Manufacture; Iron and Steel Tube Manufacture (including melting and rolling in integrated works); Non-ferrous Metals Smelting and Rolling; Shipbuilding and Ship Repairing; Marine Engineering; Boilers and Boiler-house Plant; Constructional Engineering; Miscellaneous Stationers' Goods; Manufacture and Repair of Railway Carriages and Wagons and Trams; Tools and Cutlery; Bolts, Nuts, Screws, Rivets, Nails, etc.; Electric Wires and Cables; Total Cotton; Woollen and Worsted; Rayon, Nylon, etc. Production; Rayon, Nylon, etc. Weaving and Silk; Jute; Linen and Soft Hemp; Rope Twine and Net; Hosiery and Other Knitted Goods; Lace; Carpets; Other Textile Industries; Textiles Finishing, etc.; Leather (Tanning and Dressing) and Fellmongery; Leather Goods; Fur; Tailoring, Readymade and Wholesale Bespoke; Hats and Caps and Millinery; Dress industries not elsewhere specified; Manufacture of Boots, Shoes, Slippers and Clogs (excluding rubber); All firms in Boot and Shoe Repairing; Grain-milling; Cocoa, Chocolate and Sugar Confectionery; Brewing and Malting; Tobacco; Timber (Saw-milling, etc.); Furniture and Upholstery (all firms); Wooden Containers and Baskets; Paper and Board; Wallpaper; Cardboard Boxes, Cartons and Fibre-board Packing-cases; Linoleum and Leather Cloth; Rubber; Brushes and Brooms; Toys, Games and Sports Requisites; Building; Civil Engineering Contracting; Iron Foundries; Electric Wiring and Contracting; Tramway and Omnibus Service except London Transport; Harbour, Dock, Canal Conservancy, etc. Service; Gas; Electricity; Water; Dry-cleaning, Job Dyeing, Carpet Beating, etc.; Bricks and Fireclay Goods; China and Earthenware, including glazed tiles; Other Non-metalliferous Mining Manufactures.

of the workers in all industries in each of these groups. The Ministry of Labour's Inquiry into the Earnings and Hours of certain manual wage-earners in April 1956 [1] includes statistics summarising the results of similar inquiries in previous years, with percentage increases in average earnings of all men, women, boys and girls since October 1938. In general, the Ministry of Labour material shows that, taking the average weekly earnings of all manual workers in the following groups, men, women, boys and girls, over the period 1938–55, the girls have gained most in percentage terms, the boys next, then the women, and men have gained least. It is clear therefore that, on one meaning of the term, differentials between these broad groups of workers have narrowed over this period of full employment. The average weekly earnings of the lower-paid groups have tended to rise more in proportion that the relatively higher-paid. This is consistent with the findings of Knowles and Robertson respecting skill.

Average Weekly Earnings (Manufacturing Industries), 1938 and 1955

Date.		Men.	Boys.	Women.	Girls.
1938 October.	Average weekly earnings in shillings	70/11	25/11	32/10	18/7
1955 October.	Percentage increase since October 1938	226	255	253	310

Source: *Ministry of Labour Gazette*, Vol. 64, No. 9, September 1956.

Earnings Differentials Measured by the Coefficient of Variation

The coefficients of variation in average weekly earnings of various groups of workers (men, women, girls, boys and all workers) in the selected industries since 1924 are given in Table I and in graphical form. We have linked the points in the graph by straight lines.

Table I

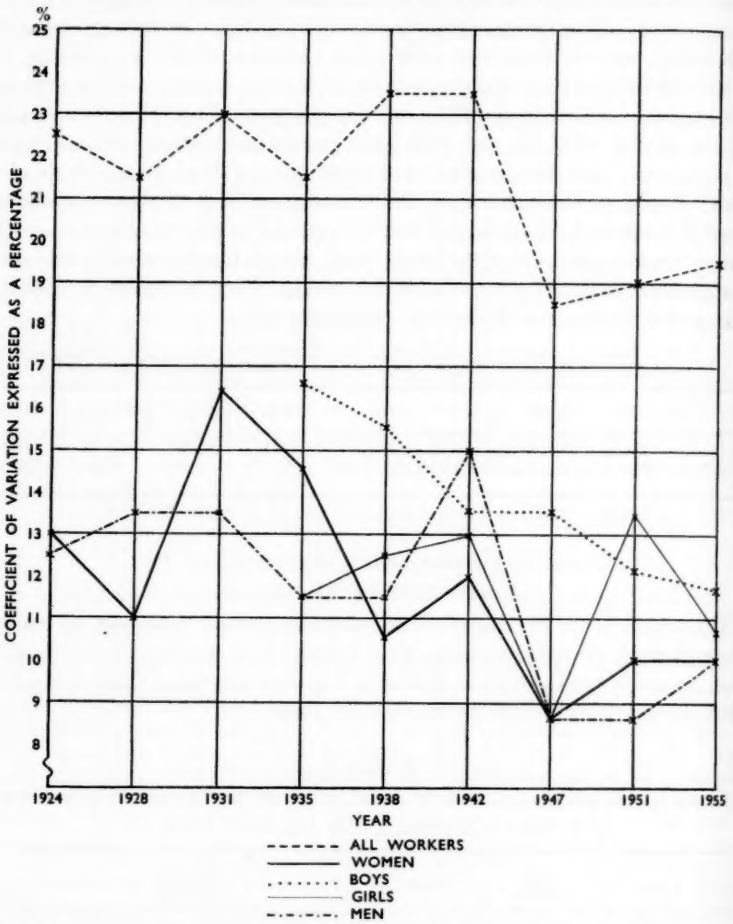
Coefficients of Variation, Expressed as a Percentage, in the Average Weekly Earnings of Workers in Selected British Industries, 1924–55

Year.	All workers.	Men.	Women.	Youths and boys.	Girls.
1924	22·44	12·62	13·10	—	—
1928	21·41	13·36	11·21	—	—
1931	22·71	13·36	16·35	—	—
1935	21·37	11·71	14·50	16·32	11·35
1938	23·58	11·37	10·58	15·47	12·42
1942	23·39	14·80	12·02	13·69	12·87
1947	18·63	8·33	8·55	13·50	8·46
1951	19·00	8·41	10·01	12·14	13·31
1955	19·65	9·74	10·04	11·65	10·61

There appears to be some tendency for the coefficient of variation to rise in periods of unemployment and to fall in periods of full employment,

[1] *Ministry of Labour Gazette*, Vol. 64, No. 9, September 1956, pp. 325–33.

Coefficients of Variation in Average Weekly Earnings of all Workers, Men, Women, Youths, Boys and Girls, 1924–1955 in Specified Industries [a]



[a] This coefficient of variation was obtained from the Ministry of Labour's Earnings Inquiry which gives a series of averages of the earnings of all workers in each of a selected group of industries, *e.g.*, in 1955 there were seventy-five industries, and we therefore had seventy-five averages for that year. We also had a series of averages for our four sub groups so that for this year we had three hundred and seventy-five averages. For each year and for each group we then obtained an unweighted mean of all these averages and obtained the standard deviation of the averages in each industry about the overall mean. We thus derived a coefficient of variation.

The reason that the coefficient of variation for all workers stands so far above those of particular groups is that there is a much greater difference between the earnings of low paid boys and high paid men, for example. In other words, the difference between these groups is greater than the difference between the averages paid by different industries to one group such as men or boys. The high coefficient of variation for all workers merely reflects a wider difference in earnings between this larger group of workers. It is because of the smaller differences in earnings of workers in the sub-groups that they were broken down.

with the important exception of the war period, and in one year, 1951, of girls' differentials. For all workers, and for each of the four groups into which they are divided, differentials are narrower from 1947 onwards than they had ever been since 1924, again with the exception of girls in 1951.

Just before the War, in October 1938, and in the only war-time year, 1942, for which we have information on earnings, unemployment fell, while differentials for all workers came to their widest since 1924. Possible reasons for this divergence will be discussed later.

On looking at men's and women's industrial differentials, we find that the coefficient of variation in women's earnings oscillated between considerably wider limits than the men's in the pre-war period. During the War, however, the figure for women did not rise so much as the men's (12% as compared with 15%), and for two of the three post-war years, for which we have calculated the figures, the coefficients are almost identical (approximately 8·5% and 10% in 1947 and 1951 respectively).

Since 1935 the results of the inquiry into average weekly earnings have been presented in such a way as to show boys' and girls' earnings separately. Differentials in earnings of boys in the selected industries were very wide (16·32%) at the beginning of the period. This is, together with the figure for men in 1931, the highest figure obtained for any of the groups, men, women, boys and girls. From 16·32% in 1935 boys' differentials have fairly steadily narrowed to 11·65% in 1955. Unlike the other groups' differentials, they continued this trend during the War. Their earnings differential in 1955 was higher than that of any other group.

Girls' differentials have tended to follow the pattern of women's, save that when the women's coefficient has risen, girls' differentials have widened more, particularly in 1951. Compared with boys' differentials the girls' differential earnings fluctuate much more, and are on the whole, save for 1951, narrower than the boys'.

Conclusions

1. *Full Employment and the War Period*

For the years examined here it appears generally true that inter-industrial differentials narrowed with full employment. While full employment may be necessary for the narrowing of industrial differentials, it is clearly not sufficient, since full employment occurred with wide differentials during the War. In that period there were several factors which together may have upset what is possibly the otherwise natural narrowing of differentials. There was first control of engagements, which prevented workers from moving to occupations where their earnings would have been higher through bonuses or overtime, and there was some attempt to restrain a rise in the level of wage-rates by forbidding strikes and by compulsory arbitration. At the same time as these controls were keeping some earnings low, there were

also large overtime earnings to be made by those working on munitions and in other occupations.

2. *Men's and Women's Inter-industrial Differentials*

Before the War, women's differentials rose to a higher and fell to a lower level than men's; during the War men's differentials rose higher, and since the War they have both been at roughly the same level. It may be that before the War, when unemployment was high, some women, perhaps secondary workers, took jobs at extremely low wages, and when unemployment fell women constituted one of the biggest new sources of labour, and so their wages rose more, particularly where they had been very low before. During the War, all of the factors referred to in the previous section probably affected men's inter-industrial earnings differentials more than women's. The number of women in the industrial labour market rose during the War, and has since remained high. The fact that they now seem to represent a large and stable proportion of the industrial force may explain the post-war similarity of their differentials to those of men.

3. *Juvenile Differentials*

Boys' differentials have narrowed throughout the period, even in 1942, more steadily than any other group. Our explanation for this trend is that the scarcity of labour which accompanies full employment has been made more acute for this group (males under the age of 21 years) by their almost complete mobilisation during the War, their continued conscription since and the raising of their school-leaving age. In spite of this consistent narrowing of boys' differentials, they remain the widest of the four groups. This may arise from the fact that in spite of their relative homogeneity in age, this group includes those on low apprentice rates and those on high piece rates.

Girls' differentials have tended to move in the same direction as women's. They have experienced the biggest fluctuations since the War, with a particularly large fall in 1947 and a similar rise in 1951 for which we can offer no explanation.

4. *Inter-industrial Earnings Differentials*

Inter-industrial differentials seem to narrow under conditions of full employment and the free movement of labour. This relationship raises several questions concerning how it occurs which cannot unfortunately be answered from the information available at present. It cannot be seen, for example, if the earnings of all the workers in the lower-paying industries rise under full employment. It is possible that the narrowing of differences in earnings paid to the workers in different industries is merely a reflection of the narrowing of differences in earnings paid to workers of different skills, which has been shown to occur by Knowles and Robertson in the studies

referred to above and indirectly by the Ministry of Labour in their figures, described earlier, showing a narrowing for all industries together, of sex and age differentials, since these are both probably correlated with skill. In this case the shortage of labour would lead to the training and upgrading of workers, leaving the unskilled in shortest supply, and their earnings would rise most. Industries which employ large numbers of unskilled workers, and therefore tend to have low average weekly earnings, would consequently have to raise those earnings more than the average. If this is the correct explanation, however, the effect of skill differentials on differences in inter-industrial earnings will itself be offset by changes in the proportions of skilled and unskilled workers employed in each industry (skill-mix) about which not enough is known.

5. *Narrowing of Differentials and the Distribution of Labour*

When inter-industrial differentials are narrowed under full employment the redistributive effect of earnings is reduced. In other words, the offer of higher earnings, normally considered one of the most powerful incentives to attract labour into undermanned industries, may be considerably weakened in full employment.

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REVIEWS

Mathematical Economics. By R. G. D. Allen. (London: Macmillan, 1956. Pp. xvi + 768. 63*s*.)

It is exceedingly difficult to do justice to this massive and important work in a review. Like a durable piece of capital equipment, it will yield returns over a long life; its suitability for its purpose will be tested by successive generations of users, and perhaps with wear and tear its errors and weaknesses will become more apparent. The first appraisal may therefore miss important features.

Let me first describe what the book does. It is not a text-book of mathematics for economists, though it gives a considerable space to the development of certain mathematical tools—complex numbers, differential and difference equations, vectors and matrices, and the algebra of operators. It is not a text-book of econometrics (" the application of modern statistical procedures to theoretical models, which have been formulated in mathematical terms," as Tintner defines it). The book is concerned with the principal branches of economics which have so far been illuminated by mathematical analysis other than the use of statistics. Now mathematical economics has not grown up as a systematic study of the economic world in mathematical terms; it has rather grown by the chance use of mathematical techniques to deal with individual problems. It has been a random assembly of bits from Walras and Pareto, Hicks and Samuelson, Koopmans and Leontief, von Neumann, Baumol, Goodwin, Phillips, Tustin and many others. Some of the literature is obscure and tortuous, lacking the beauty of the finest mathematical creation. It has been difficult to relate the bits of theory to each other, if only because of the " language problem " caused by the fact that each writer uses his own set of symbols and definitions.

This crowded and messy economic box has now been tipped out on the attic floor by Professor Allen, and carefully repacked. The whole is reduced to an order; and in that order relations, such as that between linear programming and the theory of games, appear with a new clarity. It is an extraordinary achievement when one bears in mind also Professor Allen's contributions to theoretical and applied statistics. The reduction of so much confusion to an elegant scheme, the preparation of bibliographies and exercises, the correction of proofs for a book full of mathematical formulæ—all of these must have required the vast labour of a brilliant mind. There is no waste space in the 768 pages; indeed, the book is more likely to be criticised for excessive compression than for wordiness.

The first section of the book is concerned with dynamic models of an economy, beginning from the cobweb theorem and passing to so-called

"Keynesian" models, though I suspect that Keynes (whose thought gave a large place to uncertainty) would have disowned them. More advanced mathematical theory leads on to various trade-cycle models, and thence to the theory of control systems and their relevance to economic stabilisation. Then general equilibrium analysis is introduced, followed by a discussion of the work of Leontief. Some more chapters of mathematics prepare the way for the theory of games and linear programming; with these methods behind us, we pass to two chapters on the theory of the firm and the theory of value; and finally the individual and group approach are brought together in a discussion of the aggregation problem, which concludes with a note (too brief to be very helpful) about welfare economics.

Given the principle of selection, that the book was to include the subjects on which substantial work has been done by the mathematical economists, it is difficult to quarrel with Professor Allen's choice. I would be disposed to argue that the mathematical economists have not really chosen the most important economic problems, their bias being towards those which are mathematically interesting, or which yield most easily to mathematical reasoning. Consequently a text-book of economic principles in mathematical terms would not be the same as Professor Allen's compendium; but it would contain unsatisfactory and half-finished chapters where a subject (such as decision-taking under uncertainty) is still incompletely developed.

The tiresome fact which the mathematical economists need to remember is that they are talking about human beings, and that our knowledge of the reactions of human beings is exceedingly limited. Every theory therefore starts with some large and hearty assumptions which, because of the complexity of economic life, are very difficult to test. It is not wrong to make assumptions; the danger is that, having assumed what is mathematically convenient or interesting, one may come in time to believe that it is true. It would therefore be useful, I think, if works on mathematical economics drew attention more carefully to their assumptions, even at the cost of repetition.

Potential users of Professor Allen's book may want to know what sort of mathematics they will be required to know; the answer given in the introduction is "a good deal of calculus and some algebra and geometry." This is no doubt formally correct, but it is entirely misleading. The difficulty of a mathematical text is not to be judged by counting the techniques employed in it; it is a general difficulty in following mathematical reasoning. I would not advise anybody to tackle a book with over 750 pages of clear but concentrated mathematics without a facility in mathematics approaching that required for a final degree in the subject. Such people are hardly likely to require the chapters of instruction on such matters as complex numbers, though it is, of course, convenient to be reminded of the appropriate tools in the right places. I am sorry to observe that even Professor

Allen, with his long teaching experience, appears to underestimate the difficulty which beginners find in following continuous mathematical reasoning.

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Central Banking after Bagehot. By R. S. SAYERS. (London: Oxford University Press, 1957. Pp. 149. 18s.)

ALTHOUGH most of these essays have already been published in various journals at home and abroad, they contain so much of enduring interest that this volume is most welcome. Professor Sayers is equally lucid and instructive, whether he is describing the operations of the Bank Rate in the 1920s or dissecting the influences which determine the level of bank deposits to-day. He discusses open-market operations and Bank Rate changes in the twentieth century in some detail, and there is a brief note on variation of cash reserve requirements which one hopes will be expanded into a fuller treatment in the light of recent experience in the United States and elsewhere.

These papers demonstrate the consistency and moderation of their author's approach. Some would have preferred more outspoken criticism of features such as the cheap-money policy of the immediate post-war years, the secrecy of the Bank of England or the half-hearted nature of the early attempts to operate a flexible Bank Rate. Such matters of opinion, however, must not be allowed to detract from the value of this cool and penetrating description.

The most recent essay on British banking included here is one of singular importance: the analysis of the determination of the volume of bank deposits in England in 1955–56. It is clear and compelling and does much more than answer the contention that the public play a large part in this country in determining such deposits. But just because it is so neat its limitations deserve attention. It is essentially a static market for bills, bonds and cash that is under consideration, and the possible changes discussed are all short-term. This is sufficient to show the mechanics of operations on the level of bank deposits such as the reduction by funding; that is its purpose. But it does not show all that is involved in monetary policy aimed at restraint of inflation by checking the expansion of bank deposits. For that a static model is not sufficient. The flow of funds into real investment then becomes of central importance, and attention must be paid to the possibilities of diverting the resources of the public—and in particular of the big financial institutions, such as the life-insurance companies and the pension funds—from the finance of industrial expansion into the purchase of medium and long-term government securities. A rate of interest generally thought to be higher than is likely to obtain on the average over the next decade should make such government bonds attractive to institutions with future liabilities largely fixed in money terms. Substantial institutional purchases of govern-

ment bonds will enable the floating debt and the liquidity of the banks to be reduced. Industrial borrowers, finding new issues more difficult and expensive to arrange, will not in these circumstances succeed in getting much additional bank credit; some of them will curtail their expenditure; this, in turn, will reduce inflationary pressure. Moreover, the flow of funds into the finance of local-authority investment programmes will probably alter, as it has recently. Local authorities, too, find it difficult and unattractive to issue long-term loans when interest rates are unusually high. They try to curtail or postpone investment expenditure and to borrow short. Their offers of high rates for deposits and short loans attract funds out of deposit accounts in the banks and so reduce bank deposits. Flows of funds into hire-purchase finance and through the building societies must also be considered.

That the description given is thus limited is shown perhaps most clearly in the perfectly correct antithesis between the determination of the level of deposits and the maturity distribution of the government debt, on the one hand, and the structure of interest rates, on the other (p. 107). This is how the mechanism works. But for policy neither of these are sufficient objectives. There is no fixed known relationship between any particular level of interest rates and the rate of inflation in the economy or the level of the gold and dollar reserves of the sterling area; nor is there any such relation between the volume of bank deposits or bank advances and inflation. Any such target as the attainment of a certain level of bank deposits is therefore spurious and probably harmful because it detracts from the true task of the authorities so to adjust their monetary and fiscal policies as to achieve stability in the value of the currency.

One danger of this clear essay is that, precisely because it abstracts from the long-term disturbing influences, it may give the impression that for the authorities to control the monetary situation is much easier than is in fact the case; international complications in particular are excluded from consideration. It is much to be hoped that Professor Sayers will put us still further in his debt by building on this essay on mechanics another describing the complicated relationship of flows of funds, internal and international, that must be considered in the determination of monetary policy.

In the article on central banking in underdeveloped countries the emphasis on the encouragement of commercial banking and on active banking by the central bank is welcome. But Professor Sayers is surely too sweeping in his criticism of the old doctrine that central bankers in underdeveloped money markets should encourage the growth of security markets. The mistake of the Federal Reserve System in the 1920s was in trying to force the growth of a market in a form of security alien to the economy—the banker's acceptance modelled on the British trade bill—not in trying to widen the market in short-dated paper. Of course, a market cannot be created until an economy has reached a certain stage of development. But the experience both of Canada and of Australia in the past decade has shown that a central

bank can do much to encourage the creation of a wider market in government bonds; that such action is worth while in itself, and that it does give greater powers of control over the economy to the central bank by enabling it to make greater use of open-market operations. One important limitation of the alternative weapon of variation of the legal cash reserve ratios of banks favoured by Professor Sayers, is that it affects only the banks and not other financial institutions. Where these, such as insurance companies, are important, and in some fields competitive with the banks, the imposition of high reserve ratios on the banks may be regarded as unfair discrimination against them. Unless a general upward pressure on interest rates is also exerted, it will distort the market and will not prove an effective means of credit control. As Professor Sayers himself says in another article: " Effective central banking calls for intervention in bond markets over a wide range " (p. 145).

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Trends and Cycles in Economic Activity. An introduction to problems of economic growth. By W. FELLNER. (New York: Henry Holt (London: Constable), 1956. Pp. xiv + 411. 42*s.*)

To the future historians of thought the thirties and the roaring fifties will surely provide striking confirmations of the Marxian view of thought as superstructure. In the thirties we witnessed a great blossoming in trade-cycle literature. It takes no particular illumination to see that this was the direct result of what was going on at the time. Exactly the same suspicion can be directed against much of the economics of to-day. Are we not in danger of building some sort of illusory bridge between current prosperity and that simple formula which beckons us to follow the Harrodian Path? At all events our major concern is with growth just as absorbedly as, the day before yesterday, it was with decay. A book promising to roll it all up in one package is bound to arouse the keenest anticipations. We all want to know why it has proved so impossible to maintain steady growth in the past. Do we stand at one of those decisive points in history when there is a deep structural change that will iron out all the wrinkles in the face of the future? And who did it, Keynes, or the trade unions, or the cold war? Again, on a more technical level, can we still separate trend and cycle in the good old-fashioned way? Or must we fuse the theories so intimately that we cannot even relegate them to separate chapters? Will growth theory finally tie up the loose ends of cycle theory?

The reader who comes to this book looking for new light on these dark areas may be disappointed. As we are warned in the sub-title, it is an " introduction," a survey of familiar ground. In fact, it is something of a text-book, including useful bibliographies for each of its five parts. It covers a large territory, and every reader is bound to find much interesting

and stimulating material. What does seem to be missing is anything strikingly new either as solutions or indeed as formulations of the problems or lines of attack. Professor Tinbergen made the telling remark long ago that mathematical methods are especially necessary in handling dynamical problems. Professor Fellner is in that respect less well equipped than some of his contemporaries for his task, since he not only eschews mathematics but even seems sometimes to shy from extended, rigorous analysis. This would not be necessarily a draw-back if it were a book intended to throw out numerous brilliant suggestions, intuitive insights and the like on a subject so complex as to resist formalising. But for a kind of text-book, on a subject which is confused, even chaotic, it is a serious weakness.

First there is an elementary and none too illuminating discussion of the unsolved questions of statistical methodology in studying trends and cycles. He comes down strongly, but not very convincingly, on the side of the National Bureau reference cycle, and explicitly rejects the motley crew of Juglars, Kondratieffs and so on that are usually employed. This, however, turns out to be more a declaration of loyalty than anything else, for he, like everyone else, cannot really make any further use of that great wad of statistics. Next, after taking the student on a rapid gallop through the last two centuries, Professor Fellner comes out blandly with the conclusion that these events all fit an analytic schema of one industry sparking each boom until a stage of insufficient profitability is reached. It may be so, but the evidence produced is not conclusive. Neither historians nor economists will be convinced, nor will this help in the current efforts to build a bridge between the two disciplines.

Professor Fellner embraces the Harrod–Domar growth theory, but then he goes on, rightly I think, to widen his embrace to include Schumpeter, without showing any appreciation of the difficulties in doing this or the modifications in both theories required. The Harrod model is splendid because it is simple and even calculable, but in essence it comprehends only the multiplication of existing techniques, and hence excludes the real motive force of growth, technical progress. The trouble is that we have no simple theory of technical change, except that when it happens, it happens and when it doesn't, there is trouble. To the solution of this complicated muddle, Professor Fellner brings nothing, and, indeed, does not seem to feel that it is a muddle. He does place a healthy emphasis on the necessity of breaking down aggregates to get at the structure of growth, but does not show us how this can be carried out. At times he seems to put forward a partial disequilibrium theory of cycles, as in " the analysis of the corollaries leads to looking upon interruptions of the growth process as being caused by relative scarcities." Yet at other times he seems to be referring to the traditional aggregates, land, labour and capital.

In Part Four Professor Fellner goes on to discuss the storms and disturbances that strew the smooth path of development. For the most part he

goes over familiar ground—a departure from the equilibrium path induces a further departure; there are stabilisers to put against destabilisers, and we never know what the outcome will be, until it comes out, and then it seems inevitable. The need for greater rigour may be illustrated by a quotation, the intent of which is fairly clear, but which, with the usual definitions, is self-contradictory: " The economic system has been unstable, but it has not been explosive. . . . " (p. 292).

There is a chapter on mathematical models in which he reaches the sound conclusion (p. 318) that " a simple model . . . cannot be expected to give a realistic picture of the course of events in the real economy." True enough, but what Professor Fellner seems not to see is that we are all really in the same boat. A complex phenomenon is difficult really to analyse, and it is no use writing out long qualifications in words, for this only renders the theory more cumbersome and consequently still more empty of content. There follows a cursory though slightly more sympathetic survey of some of the econometric work of Tinbergen and Klein. He favours a familiar, and very simple, Keynesian theory, with emphasis on fiscal effects.

Perhaps the most interesting and satisfactory section comes in the last part, concerned with policy and control. He reaches the widely held opinion that cycles can be eliminated but at a risk of secular wage–price inflation. He is guarded on the question of whether or not redistributory taxation could break the trend: " Sufficiently highly graduated taxation would undoubtedly weaken the performance of industrial nations " (p. 377). But how highly is " sufficiently "? Comparison of the twenties with the fifties in either Britain or the United States surely gives no clue. There is an interesting discussion of the effect of oligopoly on risk-taking and innovating. All in all, " It is conceivable that the various manifestations of the equalitarian outlook, and of security-mindedness in labor and in business, will result in a fatal weakening of the long-run tendency. . . . However, there is very little to support such a pessimistic forecast for the United States, for other American economies, and for several important countries of the European continent " (p. 386).

The book concludes with a short and sensible appraisal of the Keynes-Hansen stagnation thesis. Professor Fellner accepts the logic of the proposition that " a chronic weakness of the improvement mechanism *would* lead to the result predicted," but decides (p. 388) that " It is impossible to arrive at categoric conclusions with respect to the future functioning of the mechanism of induced improvements." This is surely the wise position and will serve to suggest the sense of balance and lack of bias that animates Professor Fellner's book. And yet it also glaringly highlights the analytic vacuity of the central facet of growth theory and underlines its essential weakness.

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Twenty-five Economic Essays in Honour of Erik Lindahl. (Stockholm: Ekonomisk Tidskrift, 1956. Pp. 412. 31*s.* 6*d.*)

PROFESSOR ERIK LINDAHL'S *Penningpolitikens Medel*, which appeared in 1930, had a profound influence on the development of dynamic analysis in Sweden before Keynes' *General Theory*. He had used the *ex ante–ex post* technique to great effect and threw a flood of light on the nature of cumulative processes. By 1929 he had also done valuable work on the place of capital in the theory of price. It was Professor Lindahl more than anyone else who prepared the ground for those fruitful theoretical speculations which brought fame to Sweden in the thirties. It was only when his *Studies in the Theory of Money and Capital* was published in 1939 that the full measure of his achievement became known in the English-speaking world. In the volume under review twenty-seven economists pay tribute to the doyen of the Swedish School.

The essays cover a remarkable range of topics. Two of Professor Lindahl's colleagues who have attained eminence as international civil servants deal with problems in that field. Mr. Dag Hammarskjöld takes as his theme " Selfdetermination and Economic Assistance for Underdeveloped Countries," and Professor Myrdal, summing up his nine years of experience as Executive Secretary of the Economic Commission for Europe, stresses the importance of " . . . a free and independent scientific agent, which approaches the problems and reaches and states its findings guided only by the inherited and established standards of the profession, without sideward glances at what would be politically opportune." Professor Erik Lundberg discusses stability problems in the Australian economy, and Mr. Kragh, an official of the United Nations Secretariat, examines the course of inflation in Bolivia, Chile and Paraguay. This strong international flavour exemplifies the unique contribution which Swedish economists have made outside their own country, but it is also, alas, a reminder of the gaps which have been left in the Swedish School.

The volume contains a penetrating contribution by Professor Frisch on Macro-economics and Linear Programming, and an illuminating essay by Professor Svennilson on Capital Accumulation and National Wealth in an Expanding Economy. Mr. Ralph Turvey, in an acute analysis, shows that there is no evidence that transactions demand for money is a stable function of the level of the national income; an increase in the total of transactions may involve a decrease in transactions balances. The paper " On Wage-Drift, A Problem of Money-Wage Dynamics," by Mr. Bent Hansen and Mr. Gösta Rehn, is disappointing. By " wage-drift " they mean the excess of the actual rate of increase of average hourly earnings over the rates agreed at the annual negotiations between the employers and the trade unions in the various industries. The results of this elaborate theoretical and empirical exercise are inconclusive, and perhaps the reason is to be found in the

authors' admission that " . . . the statistics on productivity and gross profits, which we were compelled to use, do not very exactly cover the concepts of the hypotheses to be tested."

One of the most rewarding contributions is Professor J. R. Hicks' " Methods of Dynamic Analysis." Different approaches to dynamics are here classified under two broad headings—*ex ante–ex post theories* and *stock-flow theories*, with two types of analysis, the " Q " or quantity-disequilibrium, and the " P " or price-disequilibrium. It is a brilliant piece of interpretation. In this light we find that what Keynes did was to " boil down the whole economy into one Q-market and one P-market, linked by a single price-link —the effect of the rate of interest on (otherwise autonomous) investment." This simplification fitted the economy of the thirties and forties, but the world of the fifties " . . . may be Keynesian in its policies, but it is not Keynesian in its working. If there is any simplification which is appropriate to our present problems, it must be a simplification of a somewhat different character."

In the last twenty years the influence of Keynes has been so widespread that, even if the majority of Swedish economists had not gone into administration or Government service, there could no longer be a *raison d'être* for a separate Swedish School. The post-war generation, though reared in the neo-Wicksellian tradition, are now speaking the language common to economists in every country. It is one of the great merits of Erik Lindahl that he has combined in his work the best of the Wicksellian heritage with the fruits of the Anglo-Saxon tradition.

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The Economics of Sir James Steuart. By S. R. SEN. (London: Bell, for the London School of Economics, 1957. Pp. vii + 207. 25*s*.)

To those who know his writings it is perhaps scarcely a surprise that Steuart's *Principles of Political Oeconomy* was last reprinted one hundred and fifty-two years ago. His style is usually long-winded and cumbersome, his thought often obscure; the book is larger than *The Wealth of Nations*, and, as a book, vastly inferior; and Steuart's portion has been, at least since the publication of Adam Smith's great work, almost total oblivion. Yet Mr. Sen has performed a useful task in presenting in small compass the essence of Steuart's views, for Steuart does not deserve neglect, as Ricardo and Marx both appreciated.

Mr. Sen makes clear Steuart's hard-thought ideas about market equilibrium, and does full justice to the originality and modernity of his views on bank credit and paper money. He also very properly emphasises the merit and originality of Steuart's analysis of changes in the quantity of money: " when he said that an increase in the quantity of money would on the one hand

lower the rate of interest to the extent of creating a redundancy of loanable funds and on the other increase the faculties of demanders and thus the volume of trade and industry and employment, he was certainly looking very much beyond his predecessors " (p. 98), such as Hume and Montesquieu. Mr. Sen also reminds us that Steuart was yet another who, in a general way, anticipated the ideas of Malthus on population, although in this section perhaps more emphasis should have been placed upon Steuart's ideas about the need for maintaining a balance between agricultural and industrial development.

As regards the *Political Oeconomy* as a whole, Mr. Sen suggests that it should be viewed, not as the expression of the final bankruptcy and confusion of mercantilism (not all readers will be as confident in attributing a precise meaning to this word as Mr. Sen appears to be), nor as the wrong turning at a point where Adam Smith took the right one, but as the beginning of economic thought about socialism and control. It may be so. It is true that Steuart's " prince " who is to make all the difficult, necessary and wise decisions is like some Very Superior Ministry in certain respects and not unlike Mr. Little's " superman " in others, and that some of his detailed proposals for government intervention—that, for example, designed to stabilise the price of grain (p. 146)—are completely practical and very well thought out. Certainly Steuart was a *dirigiste*. But his *dirigisme* was autocratic, not socialistic, and it was founded upon an autocratic world-view and upon a cumbersome, limited and sometimes faulty analysis. Steuart had a powerful analytical intellect, yet he makes heavy weather of most theoretical problems, simply because he lacked the tools to tackle them. He is like a man trying to perform an appendectomy with a penknife and a hatchet. His efforts are nevertheless instructive as well as remarkable, and he is still worth reading. It is good that his work is beginning to be rescued from an undeserved neglect.

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Consumer Instalment Credit. A study by the Board of Governors of the Federal Reserve System. Part I: Growth and Import: Vol. 1, Pp. 388, $1.25; Vol. 2, Pp. 287, $1.00; Part II: Conference on Regulation, prepared under the auspices of the National Bureau of Economic Research: Vol. 1, Pp. xxvi + 553, $1.75; Vol. 2, Pp. 161, $0.60; Part III: Views on Regulation, Pp. 230, $1.00; Part IV: Financing New Car Purchases, a National Survey for 1954–55, Pp. xii + 151, $0.60. (Washington, D.C.: U.S. Government Printing Office, 1957.)

ON a rough calculation, this mammoth study exceeds the combined Old and New Testaments in length by some 100,000 words. Like the Holy

Bible, moreover, some parts are better reading than others. The work as a whole was undertaken at the direction of the President of the United States as " a broad study of the role of consumer instalment credit in a growing economy, including arguments for and against renewal in some form of governmental authority to regulate credit in this field."

About 80% of the instalment credit covered by the directive is what we should call Hire Purchase Credit. The balance, " Personal Loans," covers both personal advances repayable by instalments and advances repayable on " revolving credit." These latter arise from a system widely used in America and not unknown in this country, whereby a regular monthly payment to a bank, loan company or shop gives an entitlement to credit up to a given maximum sum proportionate to the payment.

The Federal Reserve Board's study is in fact a symposium, in whose compilation bodies other than the Board's own staff were also engaged. Part I of the work consists of a study by the research staff of the Federal Reserve System of what it calls " instalment credit processes and issues of regulation," with supplementary reports on certain specialised aspects of the subject. Part II comprises papers and rejoinders by university scholars, prepared independently under the auspices of the National Bureau of Economic Research. Part III, prepared by a private consultant, is described as a " digest " of the opinions of interested parties on the public policy issues of instalment credit regulation. (Intending purchasers would be well advised to avoid this volume, which has nothing but assorted prejudices to contribute to the discussion.) Part IV is an analytical report by the research staff of the Federal Reserve Board on the results of a statistical survey of new-car puchasers in 1954 and 1955, which included field interviews with some 3,000 credit buyers and 1,600 cash buyers.

A vast number of books and articles on both the economic and technical aspects of instalment credit were already available in the United States, dating back to thirty years ago and more, and there can be very little of value in previous work on the purely economic and statistical side which is not either incorporated or improved on in the F.R.B. Symposium, or referred to appreciatively in the text or in the footnotes. In almost startling contrast, no important book on the economic aspects of Hire Purchase (let alone " Personal Loans " and the like) has yet appeared in this country; there is a dearth of even short articles on the subject, and statistical information on the use of Hire Purchase in the United Kingdom is still fragmentary and of doubtful content and coverage. The Federal Reserve Board study must therefore rank as compulsory reading for any British economist desirous of studying the subject deeply. That the work is for practical purposes indispensable, however, is a measure of absence of competitors rather than of intellectual status. This is a necessary text-book, but it is not a good one. Although around $1 million is said to have been spent on the project, and the F.R.B. undoubtedly aimed at producing a comprehensive and

authoritative " bible " which would stand the test of time, the result is in fact acutely disappointing.

Public criticism has so far fastened on the three obvious faults in the F.R.B. study; it is inordinately long, much of it is unnecessarily prolix and repetitive, and it leans over backwards to avoid " bias." Moreover, in attempting to be fair both to those objecting to and to those favouring regulation, the authors and editors between them have almost succeeded in banishing from the book anything so crude as an actual conclusion. One is left, in fact, with an unassorted list of pros and cons and vague surmise, and an astonishing absence of recommended yardsticks wherewith to measure the one against the other. The economists disagree amongst themselves, particularly in discussing whether Hire Purchase has on balance contributed to the growth of the economy or not, and the research staff of the F.R.B. does little to improve on the argument. The basic reason for the inconclusive nature of most of the academic analysis is clear; so little is known about the consumer, even in terms of average behaviour, that the economist is forced back on analysing the effects of a variety of possibilities, to none of which an order of probability can be assigned.

The main object of the study was to clarify the policy issues involved in regulation of consumer credit, and on this topic little of positive value has emerged. The reason for this is simple; the appropriate questions were not asked. After 800,000 words, or their equivalent in statistical tables, we still do not know much of dynamic significance about the consumer himself. We do not know whether, to what extent and in what circumstances, he saves to raise a Hire Purchase deposit; to what extent he uses Hire Purchase as a means of conserving liquid resources which he will use if necessary to frustrate the object of regulation; the extent to which the monthly payment rather than the deposit is a controlling factor; the extent to which the car market differs from that of other durables commonly purchased on Hire Purchase because deposits are normally found by trading-in existing vehicles. We know something about the immediate impact of changed Hire Purchase regulations, but nothing of their subsequent effects in producing delayed recoveries, delayed reactions or built-in fluctuations. We do not know the pattern of behaviour when consumers finish paying off one lot of instalments. Above all, we do not know to what extent consumers, particularly in certain stages of the life-cycle and certain income ranges, indulge in Hire Purchase as a regular habit to which they devote a fairly steady part of their incomes.

By what appears to be an astonishing oversight, none of the many writers contributing to the symposium has been at all inquisitive about the very marked difference in the period of fluctuations in instalment credit since the War as compared with pre-war years. Perhaps even more significantly, no proper curiosity was aroused by the fact that the fluctuation about trend contradicted all previous experience in the 1953–54 recession by moving contrary to economic activity. The tendency for any marked departure from

normal levels of Hire Purchase buying (such as might be induced by Regulation W or similar official interference) to be reflected automatically in a similar disturbance two or three years later is not entirely unknown in the United States; it enters, for example, into published thoughts of the automobile industry, which looks to the repercussions of the 1955 boom as a likely stimulant in the coming season. Those concerned in the study have accepted pre-war experience and thinking relating Hire Purchase fluctuations with economic activity in general, and thereby missed a golden opportunity of examining closely the test-tube specimen ready to hand in the form of experience under Regulation W. This is an astonishing omission in a study primarily concerned with the pros and cons of official regulation.

Despite the efforts of the Federal Reserve Board, one must conclude that instalment credit and the behaviour of the consumer in relation to it remains one of the major uncharted fields of economics.

J. R. CUTHBERTSON

London.

The Economic Status of the Aged. By P. O. STEINER and R. DORFMAN. (Berkeley, California: University of California Press (London: Cambridge University Press), 1957. Pp. xii + 296. 37*s.* 6*d.*)

ALTHOUGH interest in all aspects of ageing has been growing for some time, the survey described in this volume was one of the first really large-scale attempts to study the economic circumstances of old age. That such a study has been carried out in the United States is interesting because, by British standards at least, the relative size of the aged population in the United States is small, at present just over 8% of the total population; and although the forecast increase in the population aged sixty-five and over is dramatic (a doubling of present numbers in the next fifty years), the ratio to total population seems unlikely to change very significantly. This suggests that the current concern with the financial problems of old age may not only spring from changing numbers of the old, but may also reflect changing social habits and standards.

The data for the present study were obtained from two sources, the Current Population Survey conducted by the United States Bureau of the Census in 1952 (including the income sub-sample), and a special follow-up survey of persons sixty-five and over who had come in the income sub-sample. This provided a sample of 3,000 households containing one or more persons over sixty-five, and a total of some 3,600 individuals. Collection of the data for the follow-up survey was carried out by census enumerators. This close co-operation between government departments and academic bodies which made possible, for instance, the use of census data as a sampling frame must be a source of great envy to academic workers in the survey field in this country. They will know only too well that obtaining

samples of particular groups of the population can be a very costly and tiresome business.

The response to the follow-up survey was exceedingly good. Non-response varied by type of question, the maximum rate being 11·5%, for total receipts. The result is a study which provides an extremely useful body of data and some stimulating conclusions from the authors. They are able to demonstrate clearly the particular vulnerability of women to economic difficulties in old age, and the importance which Steiner and Dorfman attach to the availability of more adequate employment opportunities for women over the age of forty, and to provision for survivors in pension schemes, are factors of considerable relevance in Britain as well as in the United States. Similarly, their conclusion that the generosity of programmes of public or private support will be crucial in determining the economic status of the aged is also true of Britain; but the emphasis on comprehensiveness is clearly of greater importance in the United States, where the report shows that in 1951 only 35% of couples, 34% of single males and 21% of single females received any pension, from employers or from the State. The considerable extensions of coverage of the O.A.S.I. scheme in 1950 and 1951 have changed the picture quite markedly but not completely. Others of their conclusions about the importance of the obsolescence of skills and the difficulties surrounding the continued employment of the older worker seem less securely based on the information provided in this survey.

In fact, one of the major weaknesses of this work is the tendency to drag conclusions from material which is too imprecise and uncertain of interpretation to provide adequate support for them. The questionnaire used in the follow-up survey (which provides the meat of the data) was often superficial in its handling of extremely complex situations. Steiner and Dorfman admit that they were unable to use the information received in reply to the question " Did you contribute your share of the living expenses of the family? " and the experience of other surveys suggests that unprompted answers to questions like " Did you use up any savings, cash bonds, borrow on life insurance or sell or mortgage property to meet expenses? " are hardly likely to produce very accurate replies.

Another important defect is the omission from the discussion of the effect of age on the position within the over sixty-five group. Although many important categories of old people are studied, single people and couples, men and women, those living with relations and those living independently, there is no study of separate age groups over sixty-five. But other studies have shown how rapidly the proportion of older people in employment falls off in each year over sixty-five (and Steiner and Dorfman stress the importance of employment income in improving the economic position of the old), and age will also influence living arrangements both through its effect on the income level and also through its relation with

capacity and health. The absence of any analysis by age is particularly unfortunate in view of the remarkable increase in the proportion of elderly people aged seventy-five and over which the authors forecast for the next fifty years.

Some of the main conclusions of the work derive from a comparison of the total receipts of the aged (their total incomes, occasional cash gifts and drawings on savings to meet living expenses) with a minimum subsistence budget. This and the alternative budgets are derived from material, much of which is old and of small coverage, by such complex but crude procedures that the authors' comment " that the resulting figures are only indications of magnitude " must seem an understatement. However, the absolute levels of at least the minimum budgets appear to be so low as to justify the assumption that they do in fact represent a minimum. On the receipts side, the reservations which have to be made are more serious. It is not good enough to say that the under-reporting biases are likely to be about the same as in other surveys. This might be legitimate for comparing the resources of the old with those of the rest of the population (although far too little is known about the incidence of biases as between different groups), but here the comparison is with the calculated budgets. Reservations such as these may blur, but they cannot seriously alter, the broad outline of the picture which the authors paint. In the United States in 1951 a quarter of the couples, one-third of the single males and one-half of the single females, over the age of sixty-five, had total receipts which fell short of the level of the minimum subsistence budget.

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Wage Policy and the Health Service. By H. A. CLEGG and T. E. CHESTER. (Oxford: Basil Blackwell, 1957. Pp. 142. 18*s.* 6*d.*)

IN their introduction the authors state that: " The purpose of this study is to try to answer two questions: Can the Whitley system of the National Health Service be improved? and: Does the centralised system of determining wages and salaries in the National Health Service shed light on the possibility and desirability of a national wage policy for Britain? "

After a brief account of the antecedents and the present structure of the Health Service Whitley system (a General Council and nine functional Councils) the authors give an outline of the course of negotiations in the several Councils between 1948 and the end of 1954. They draw attention to the numerous special features which distinguish so markedly the working of the National Health Service Whitley Councils from that of Whitley Councils elsewhere—the most important of them being the part played by

the Treasury; and the fact that agreed rates in the Health Service are maxima as well as minima which cannot be departed from, either upwards or downwards. They then go on to set out factors which have been predominant in the determination of wages and salaries in the Service, with particular reference to the role of arbitration proceedings before the Industrial Court and the Industrial Disputes Tribunal.

Their short study is concluded by a consideration of possible (and impossible) ways in which the working of the Whitley Councils in question might be improved, and also of any lessons for a national wage policy that might be derived from the preceding narrative and analysis.

There can be no doubt of the usefulness of all that part of this study which deals with the history and operation of the Whitley Councils in the Health Service. As might be expected from the authors, it is, within the limits of the space they allowed themselves, both thorough and illuminating. Its value, however, might have been appreciably greater if rather more time had elapsed than only six years since the initiation of the new system. The authors scarcely give sufficient weight to the magnitude of the change in relation to the previous methods of wage and salary determination, or to the fact of the inexperience of the negotiators on both sides of the Councils. Their own suggestions for the improvement of the system are on a very modest scale—they consider more drastic proposals but reject them all as impracticable. They hold " that there is a good deal to be said in favour of reducing local authority representation on the management side; that the appointment of Regional Personnel Officers who could also serve as management representatives on the Councils should be considered, and that the Councils should give thought to the possibility of choosing an independent Chairman or independent Chairmen." The last of these three suggestions in particular would seem to have much to commend it, though not (as the authors suggest) in order that the Independent Chairman could act on occasion as arbitrator between the two sides and so shorten the delays inherent in reference to one of the arbitration tribunals—which is almost certainly impracticable; but rather to have the advantage of an outside (non-voting) Chairman to conduct the business at meetings of the Councils, and to act as a conciliator between the two sides, in place of the present arrangement whereby the chairmanship alternates between the leaders of the two sides.

The concluding chapter on Lessons for a National Wage Policy appears to be based on a misconception of the realities of the situation. The authors say:

> " The participation of government officials in negotiations; the absence of problems of payment by results and payment over the rate, and the amalgamation of many separate institutions into a single service, might have appeared to provide the opportunity for an experiment in formulating and applying a government policy on wages and

salaries in one industry. The opportunity, if such it was, was not used. In fact no one seems seriously to have considered using it. This can surely be taken as additional evidence that the traditions of the British system of industrial relations are powerfully opposed to the imposition of a government wage policy."

The last sentence in the passage just quoted is surely a *non-sequitur*, since it ignores the all-important fact (and the same holds good for the chapter as a whole) that the National Health Service constitutes only a small part of the labour market of the country. It would be impracticable for the Government to pursue a wage policy in relation to those employed in the Health Service, which was markedly out of line with the general structure of wages as determined by collective bargaining in other forms of employment. That " the traditions of the British system of industrial relations are powerfully opposed to the imposition of a government wage policy " is a statement which may be readily accepted; but the experience of the National Health Service is quite irrelevant in this connection. In practice, as the authors show in the earlier part of their study, wage and salary scales in the Service have tended under the influence of the Treasury, mitigated to some extent by the awards of arbitration tribunals, to lag a little behind those in outside industries and other comparable employments (for example, local government service), thus imposing a certain strain on the loyalty of employees in the service, and perhaps affecting the number and quality of new entrants. In a period of general increase in prices and wages the only wage policy open to the Government with regard to the Health Service (in the absence of a *general* wage policy) was to " follow the market " under penalty of not being able to maintain the man- and woman-power of the Service.

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Social Aspects of Prescribing. By J. P. MARTIN. (London: Heinemann, 1957. Pp. xii + 180. 21*s.*)

FOR the purposes of this study Mr. Martin has selected sixty-three County Boroughs in England—all those, that is, having populations ranging from 50,000 to 300,000. He has collected information with regard to as many as fifty-three variables, relating for the most part to the year 1951 (before the introduction of charges); though he has also been able to make certain interesting comparisons with earlier years (1947, 1938 and 1933), for which National Health Insurance figures are available, in respect of the frequency and cost of prescriptions.

In analysing his data he has employed four types of statistical methods: a matrix of concomitance; multiple regression equations; factor analysis; and a special technique of his own devising for ascertaining the relative

contributions of two variables where a third variable is the product of the first two. As Professor Titmuss observes in his Foreword, Mr. Martin " has probably pushed as far as is fruitful the application of statistical techniques to the analysis of group data in its present form."

Mr. Martin's investigations reveal that there is no statistically significant correlation between the frequency of prescription and the average cost per prescription. The two combined make up the total prescription cost per patient; and it is instructive to note that variations in frequency of prescribing were twice as important as variations in the average cost per prescription in contributing to variations in the total cost of prescribing per patient. Hence areas where there was a high frequency of prescription tended to be areas where total cost of prescribing per patient was high.

Frequency of prescription was found to be closely correlated with morbidity as evidenced by two main indices—infant mortality and the proportion of deaths due to respiratory diseases. There was also a close association (positive) with mean annual rainfall and (negative) with mean annual temperature, each of which is likely to have some bearing on morbidity. Regional analysis further suggested that areas (notably the Lancashire County Boroughs) where single-handed practice was common were likely to show greater frequency of prescribing than other areas in the North and Midlands where partnerships were a more prevalent form of practice. Superimposed on all these is the historical factor: the local " custom," or pattern of prevailing habits reflecting local attitudes and expectations as to the appropriate behaviour both of doctor and of patient when illness occurs. Mr. Martin states that: " In spite of the changes arising from the introduction of the National Health Service, one could probably get as good a prediction of the average frequency of prescription per patient in 1951 by using the comparable figures for 1933 as by using any amount of contemporary information."

So far as average cost per prescription is concerned, the analysis shows that there was a close positive relationship between this variable and social class: high average cost per prescription prevailed in areas enjoying relatively high degrees of prosperity, low infantile mortality rates and in which doctors tended to have small lists. In general, it appeared that the poorer the area, the cheaper the prescription; though allowance had still to be made in some cases for the " custom " of the area.

All this and plenty more besides is to be found in Mr. Martin's book; but he could with advantage have been rather more helpful to his non-statistically minded readers, especially in such matters as the detailed interpretation of the information provided by the matrix of concomitance which he reproduces in Appendix E.

Finally, attention should be drawn to his commendably undogmatic treatment of some of the administrative problems of the control of prescribing, in the light of the results of his inquiry.

This is a valuable piece of research, not merely because of the intrinsic interest of the findings, but also because it points to the imperative need for research on different lines which would throw light on the medical and other significance of the facts here recorded.

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Report of His Royal Highness the Duke of Edinburgh's Study Conference on the Human Problems of Industrial Communities within the Commonwealth and Empire, Oxford 1956. (London: Oxford University Press, 1957. Two volumes. Pp. xii + 338 and xv + 339. 42*s.*)

THE Duke of Edinburgh's Study Conference consisted of some 300 persons, one-third from the United Kingdom and the rest from the Commonwealth and colonial territories. The age limits set were roughly from twenty-five to forty-five, and the participants were drawn from the management, trade-union and operative fields. Before their arrival in Oxford they were provided with twenty-six " background " papers written by persons in the academic and industrial fields. After they arrived, the first five days were occupied by the opening speeches, including the Presidential address by the Duke of Edinburgh, and by nine addresses delivered by Sir John Maud, Lord Citrine and seven others prominent in industry and trade unions. The next ten days were spent in groups on study tours in different parts of the country, where the members of the Conference inspected industrial and social developments. On their return to Oxford they listened to an encouraging sermon preached by the Archbishop of Canterbury from the somewhat discouraging text " Work out your own salvation with fear and trembling," an address by Sir Harold Hartley on " The Two Partnerships—Man with Man and Man with Nature " and five addresses on the Overseas Viewpoint.

In the meantime the groups prepared reports—after a complicated system of inter-group consultation—on specific topics which had been assigned to them for investigation. These reports—twenty of them—were presented orally to the Conference in a marathon session lasting from nine in the morning to six in the evening. The greater part of the following and final day was occupied by a masterly summing-up by Sir Harold Morris, who surmounted with distinction the dual handicaps of little time for preparation and the cold from which he tells us he was suffering.

All this and much more—the speeches at dinners, the addresses of welcome, the programme of the Conference, the biographical details of speakers and participants—are presented in these two volumes. It is perhaps too much, however, to expect that they should enable us to judge the value and success of the Conference. For a clue to the answer one might turn to the reports of the study groups, but such a procedure would hardly be fair. It cannot be expected that the reports, prepared in haste, attempting to digest

all that had been seen, heard and read, extending each to some 2,000 words only, should be exhaustive or conclusive. Indeed, it is not surprising that many of them should be superficial.

The real test of the Conference must, of course, be what the participants got out of it and what use they can make of the experience. The second question is one which clearly cannot be answered at this stage if it ever can be in the future. The first admits of at least a partial answer, for one can read into this account of the proceedings a genuine note of enthusiasm and a feeling that it was all worth-while. That perhaps is the best test of the success of any conference which, like this one, does not attempt to arrive at agreed conclusions, recommendations or decisions. Moreover, it is also clear that, despite its diverse composition, there was a genuine willingness in the Conference to give credit for good-will and honest intention which is not always characteristic of discussion on matters of industrial and human relations or methods of colonial development.

If there is little in the reports of the study groups which is likely to be of permanent value, there is more in the background papers and the prepared addresses presented to the Conference. Many of these, although they appear to have made little immediate impact on the members of the Conference, have a wider interest and a lasting importance. Particularly notable are some of those by people actively concerned with the industrial and communal problems of colonial and commonwealth areas of recent development. They throw a clear light on the conflict between the short-term advantages of industrial paternalism and the long-term necessity to build self-reliant communities.

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Technical Change and Industrial Relations. By W. H. SCOTT, J. A. BANKS, A. H. HALSEY and T. LUPTON. (Liverpool: Liverpool University Press, 1956. Pp. 336. 17*s.* 6*d.*)

THIS book is a study of the relations between technical change, social structure and attitudes to change undertaken in a single steel plant. The firm is not named, but is very easily identified. It is understandable that such a thorough inquiry as this should be confined to one works. A sizeable team has been engaged on it, and it would require many more researchers to make any wider investigation that was not to be superficial and impressionistic.

The results of this inquiry, however, need to be interpreted with care, and it is doubtful if they can be used to support any sweeping generalisations. The case studied is unusual in many ways. A small family business develops into a large public company, in which nevertheless a strong family interest is maintained. At a certain point in its development it changes over from

hand rolling of sheet and plate to continuous strip as part of a large integrated steel works. These changes took place mainly during the late thirties in circumstances very different from those prevailing to-day. Also, the steel industry has an unusually healthy tradition in labour relations and has structural features (notably a high capital/labour ratio) which probably facilitate technical change. The light which this book can be expected to throw on present-day attitudes, incentives and deterrents to technical change is therefore limited. But it is only on the basis of detailed case studies such as this that our knowledge is likely to be advanced. It is to be hoped that as the number of these increase (in all branches of industrial economies) someone will make it their business to work back over them and pull the threads together.

Some very interesting points emerge from this particular book. At first, family control (inevitably threatened by expansion) and inbred management was not conducive to technical change, and the decisive impulse seems to have come from outside the firm, viz., the rising demand for sheet and the adoption of the new techniques by competitors. When the plunge was taken the consequent increase in the number of top executives recruited from outside the firm (with university and professional qualifications and little or none of that experience of traditional techniques possessed by men who rose from the ranks) produced a readier acceptance of change.

So far as labour was concerned it is quite clear that the conciliatory atmosphere so characteristic of industrial relations in steel was a vital factor in the success of the operation. The right of management to make technical changes and to man-up new processes was conceded by the men. Management gave full recognition to the unions and accepted their seniority rules in the re-allocation of employees. Most important of all, it appears, was the fact that changes were discussed and agreed by representatives of the men (who were familiar with conditions in the works and with the feelings of the men) rather than with union officials. It is significant that less success in winning acceptance of change was obtained from the craftsmen than from the process workers. The proportionate importance of the latter in the labour force increased as a result of technical reorganisation. They belonged to many unions, there was a lack of established procedures, and they had not inherited the same tradition of co-operation as the steel workers. Incidentally, this study provides further evidence that the introduction of automatic processes does not necessarily reduce the demand for skilled workers.

The chapter on attitudes to technical change is the least satisfactory. It illustrates the difficulty of obtaining much useful information by questionnaire except on narrow issues with small groups and where it is possible to reduce the number of variables. It would appear, however, that the effect on wages (absolutely and relatively) is the vital factor affecting labour attitudes to technical change.

The main defect of the book is that it does not keep closely enough to

its central theme. This we are told (p. 249) is " to add to our knowledge of factors which promote and impede the introduction and assimilation of technical change in industry." We are indeed given a great deal of information on this score, but much is almost incidental to general discussion of the consequences of technical change.

Nevertheless, this is an extremely valuable contribution to our knowledge of the subject. The book is very well written—surprisingly so in view of the number of hands which have apparently contributed to it. There are excellent summaries at the end of each chapter, and with a few exceptions (*e.g.*, Fig. 2 and Table 3) the figures and tables are well arranged and adequately explained.

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The International Protection of Trade Union Freedom. By C. WILFRED JENKS. (London: Stevens, 1957. Pp. xl + 592. 84*s*.)

DR. JENKS is the former legal adviser and present Assistant Director-General of the International Labour Office. His book has a triple interest. In the first place, it has the interest which its title suggests as an exposition of the nature of trade-union freedom and the international action taken to protect it. In the second place, it has a narrower or more specialised interest in regard to the development of the theory and practice of international law with special reference to the tripartite structure of the International Labour Organisation. In the third place, it has a wider and more general interest as an exposition of the constitution, structure and procedure of the International Labour Organisation.

The principle of freedom of association for lawful purposes in general and for trade-union purposes in particular is here taken as axiomatic. Whatever murmurings there may be in national circles, the principle which was declared in the original Constitution of the I.L.O. by the Treaty of Versailles in 1919, reaffirmed in the Declaration of Philadelphia in 1944 and reincorporated in the revised Constitution of 1946, is still accepted international doctrine. The first guarantee, therefore, of the principle of freedom of association throughout the world lies in the universality of the membership of the I.L.O. and the international obligations which such membership entails. It is clear, as Dr. Jenks points out, that " the international recognition of the right of freedom of association . . . is inconsistent with a monolithic conception of the State " and that the tripartite nature of the Organisation itself means that " States cease to be watertight compartments." The practical significance of these observations in relation to trade-union freedom was demonstrated with reference to Germany and Italy in the period before the Second World War. Their post-war implications have still to be worked out.

To translate principles into practice necessitates definition and enforcement, and it is with these matters that the bulk of this book deals. The main texts defining the fundamentals of trade-union freedom are two International Labour Conventions adopted in 1948 and 1949. These Conventions are binding only on the countries which have ratified them, but more and more they have come to be taken as the standards of reference in all the procedures of the I.L.O. for investigating and dealing with complaints and allegations of infringement. Dr. Jenks may be right in stating that these standards are unequivocal, but they are certainly expressed in somewhat general terms. They skate delicately over controversial issues such as the relationship between freedom of association and the obligation to respect the law of the land, practices such as the closed shop, and the extent to which trade-union freedom implies the right to strike. This, however, is hardly matter for surprise. Indeed, it is, if anything, more surprising that it should have been found possible to secure agreement at all in view of the differing political and industrial conditions of the countries throughout the world. It is true that the texts were adopted at a time when Russia was not a member of the I.L.O., but she has since returned to membership and has now ratified the 1948 and 1949 Conventions.

Of the procedures for examining the extent of compliance with the obligations in regard to trade-union freedom assumed by states in virtue of their membership of the I.L.O. and the Conventions they have ratified, all except one depend in the first place on persuasion and in the last resort on publicity. The exception is the credentials procedure under which the International Labour Conference can, in certain cases, unseat delegates. There have been attempts in the past to use this procedure as a means of disfranchising workers' delegates emanating from trade-union movements alleged not to be free. It is doubtful whether this is the real purpose of the credentials procedure and, in any event, it has rarely been possible to rally the necessary two-thirds majority required to unseat any delegate. It was, however, done in 1957—too late for comment in this book—in the case of the Hungarian employers' and workers' delegates.

Dr. Jenks concludes that the time for any definitive evaluation of the body of law and precedent which he has assembled in this work is still far distant and that freedom of association is a right which can be made fully effective only when other civil liberties are equally respected. The preliminary evaluation, however, which he essays of the progress achieved and of current tendencies and problems is enlightening in itself, and demonstrates once more the role which the I.L.O. has played in creating a climate in which respect for human rights may flourish.

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The Implications of Technical Change in Agriculture. Proceedings of the Ninth International Conference of Agricultural Economists. (London: Oxford University Press, 1957. Pp. xiii + 571. 42*s.*)

DR. H. C. TAYLOR, doyen of United States agricultural economists, described this Conference, which met at Helsinki in August 1955, as " one of the most important agricultural organisations in the world." Its record provides a wealth of material about the farming economy of thirty-five countries, including the U.S.S.R. and China, and for the first time Latin America. In a week twenty-seven papers were read and there were 143 contributions to discussion.

It is commonly said that agriculture has advanced more in the last century than in the preceding 5,000 years. According to Sherman Johnson real income per farm worker has doubled in the United States since 1914. In Denmark net income per head doubled in the sixty years before 1925–29 and nearly trebled in the first half of this century. The rapid rise in output per unit of input has been made possible by a number of factors, which cannot be disentangled. Pihkala of Finland tells us that in Sweden the increase of grain yields since 1890 is " credited half and half to plant breeding and fertilisers."

But, as Dr. Morales of Costa Rica said, " technical change in agriculture is extremely spotty. It is spotty between and within countries." Even in North America there are pockets of backward farms in isolated regions where poverty is self-perpetuating, partly for lack of roads and utilities, but also through lack of adequate schools. It was striking how many speakers from different parts of the world fastened on education of the farmer as the mainspring of technical progress.

Dr. Medici of Italy distinguished six main types of farming: peasant subsistence, commercial family farms, large-scale capitalistic, collectives and State farms, nomadic (shifting cultivation) and part-time holdings. Technical progress has been mainly confined to the second, third and fourth, though in principle all can benefit from improved seeds and fertilisers. Subsistence farming is still the predominant type. In Asia, and to a less extent in Europe, farming is a way of life rather than a business.

Most of the speakers dealt with different aspects of the problem of small family farms. Some of the smallest and most efficient farmers are to be found in Japan, where pressure of population makes it necessary to increase yields per hectare by every possible means, including deep ploughing and water control. In India the emphasis is on improvement of small tools, for example, the substitution of scythes for sickles and of steel-pointed ploughs for digging sticks. Large-scale mechanisation is no answer in densely populated areas. Indeed, the People's Republic of China has probably more to learn from the techniques followed in Japan than from the mechanised farming of Soviet Asia. The Soviet representatives contributed two papers

on agricultural planning and economics in the U.S.S.R. and not only answered questions orally but also supplied additional written material about the economy of collective farming.

In Europe, as in South-east Asia, one of the crying needs is consolidation of scattered holdings forming part of one farm unit, not with a view to collectivisation but to make individual exploitation profitable. But this encounters stubborn resistance. According to Medici, 8 million hectares would benefit from consolidation in France, and in Italy at least 3 million. He adds that " twenty years ago the problem was more difficult than it is today because there was an excess of rural population, whereas today the percentage of rural population is decreasing." Neither East nor West can claim to have solved the problem of changing the peasants' traditional way of life. In India hope is held out that community developments in the villages may do by persuasion what in other countries has been brought about by economic pressure or compulsion.

Running through the discussions was the fear that technical and economic progress may undermine the traditional way of life of millions of peasant homes and small family farms. According to F.A.O., " inadequate and unbalanced diets are still the common lot of more than half the world's population, even though the threat of actual famine has receded." Governments and farm organisations are torn between the attraction of sound long-term policies designed to promote efficiency and the pull of short-term policies designed to preserve the *status quo*. There was general agreement at the Conference that education supplies one of the keys to more efficient farming. It was Dr. Niehaus of Germany who went farther and urged that it is not sufficient to educate the masses of peasants: it is equally important to educate the men at the top of farm organisations so that they will understand the interests not only of their own members but also of the whole community.

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Farm Trouble. By L. Soth. (Princeton, New Jersey: Princeton University Press (London: Oxford University Press), 1957. Pp. vii + 221. 30s.)

Lauren Soth is a Pulitzer Prize-winning Iowa editor who formerly taught economics at Iowa State College. His problem is " surplus " or the " low price " situation in agriculture and the associated disparity between the incomes of persons who farm for a living and those who do not. Many of the top two million " commercial " farmers whose productivity has matched that of non-farm workers have received relatively thin economic returns. And there is worse to come if present tendencies prevail. While *per capita* farm income, as a whole, in 1954 was only about one-half of non-farm, the past

fifteen years have also witnessed a persistent and widening gap between the upper and lower income groups in agriculture. Mr. Soth contends, therefore, that the plight of about one-third of full-time farm families with realised net farm incomes below $1,000 per annum overshadows all other farm issues. Not only is this particular income bias a challenge to national economic standards, but the lower productivity of the citizens involved is a drag on the general well-being, compared with their potential productivity in alternative employments. These rural poor, largely Negro in some areas, are not only the weakest economic link but also the one by which democratic capitalism will be judged, especially by the non-white, rural African, Asian and Latin American peoples.

In the light of the chronic imbalance between the demand and supply for agricultural goods and persistent rural poverty, Mr. Soth examines the policies of government, farm organisations, sectional interests and " farm blocs " in Congress. With few exceptions, he has found their policies wanting. His own contribution to policy here features direct government payments to farmers whose product sales fetch less than a given government-guaranteed price. A number of American schemes and British deficiency payments are cited as precedents. The present disastrous extreme short-run changes in market prices would, in effect, be eliminated by this means. The total public cost of such stabilisation, moreover, would be less than the government outlay required to purchase and store the present " surplus," since under the proposed plan prices may sink to a level at which all perishable farm commodities and most of the storable ones are consumed. In their turn, direct payments to farmers for storable products, such as wheat and corn, would not exceed an amount necessary to maintain an " ever-normal-granary " type reserve.

Current acreage control and parity price support programmes, as Mr. Soth aptly points out, leave untouched about 75% by value of American farm products, aid exclusively the big farmer and make food dearer to the consumer. Paradoxically, they have stimulated greater domestic output on fewer acres, while they have made costly American agricultural exports unsaleable abroad. Former importing nations now produce vastly larger amounts of wheat, rice and cotton because United States supported prices exceed world prices. A corollary to the existing programme is the tariff on agricultural imports, in order to avoid " supporting prices for the whole world." Protection, however, aggravates the dollar shortage abroad, leads to retaliation and compounds the domestic over-supply problem.

Mr. Soth believes that his prescription for stabilising farm marketing is more consistent with free-market institutions than the alternative, all-pervading price and acreage controls. Prices under his plan would revert to their function of regulating production and guiding consumption, and would not merely indicate, as at present, the degree of commodity " income protection " available to producers. Government-guaranteed prices are specifically not designed by the author for the role of correcting income inequities. The

latter he would achieve by significantly larger Government payments for farmer " performance " in an expanded " soil bank " programme and in a reformed conservation programme which really aim to take enough land out of production to reduce the " surplus." As further devices for improving farm incomes, he suggests food subsidies for all low-income families and lower income-tax rates for farmers. None of this will avail, however, unless operators on uneconomic units are encouraged by means of Government subsidies and other help to leave the farm (" Homesteads in Reverse ") and unless better non-farm vocational training is provided for their children. An enlarged " whole-farm planning " programme, including the provision of adequate credit, family and technical guidance is further strongly recommended to improve the lot of low-income farmers who remain on the farm.

My reservations to this forward-looking document are largely in matters of emphasis. I find his robust espousal of the " Homesteads in Reverse " plan inconsistent with avowals of love for family farming and rural living. Granted that many of the children raised on farms will have to find work elsewhere, it would be enlightening if the author would now turn his searching mind to the already grave urban problems that have been aggravated by more than one farm family in four abandoning their farms, for better or for worse, since 1940. I do not speak of the complications that could arise in a recession. Instead of encouraging people to leave their farms, why not mingle the universe of " whole farm planning " with government encouragement of selective migration of industry to low-income regions? Then, perhaps, the latter could approach that equality of productive capital resources so badly needed by *both* industry and agriculture in the low-income areas of the United States if they are ever to catch up with the more favoured areas.

As far as its effects on surplus supply is concerned, moving more small farmers out of agriculture is likely to result in expanded production. The operators with more capital who acquire the vacated lands will be in a better position to mechanise the production of just those staples which now contribute most heavily to the "surplus." And, by all means, let us first make the adjustments in agriculture needed to eliminate as such the many hundreds of thousands of low-paid, sub-standard and imported migratory labourers, before we start tampering with the lives of any family farmers with a roof over their heads.

Given 30 million people in the United States in families of less than $3,000 income per year, and the country on the brink of a great population bulge, an overall surplus of the order of 6 or 7% can hardly be taken as an absolute. With the characteristic good sense that flows through this book, Mr. Soth asserts that " large stocks are not as troublesome as serious shortages." Just so. But if, as he points out, it is increasingly difficult to sell, loan or give away food and fibre on a unilateral basis, why not try the more acceptable multilateral approach, such as the United Nations Fund for Economic Development (SUNFED)?

Again, if one accepts the proposition which Mr. Soth underscores heavily in this book that "in an industrial economy of varying degrees of monopolistic and semimonopolistic controls, the only way the farmer can gain a measure of stabilization is through government action," what is to prevent the same controls from being exerted to negate any income gains that farmers or, indeed, consumers may secure through Government payments?

Finally, I found it difficult to agree with Mr. Soth's definition of efficiency, as when he reports that " Stilbestrol is now being fed to approximately all the cattle on feed in the United States and the U.S.D.A. figures show that it steps up efficiency of cattle feeding by 11 per cent." No doubt when one accepts the industrial revolution in agriculture, one accepts it whole. My personal reactions aside, however, anyone who aspires to understand or to modify the "farm trouble" must read Mr. Soth. He has written the best book of its kind in a decade.

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The World Fertilizer Economy. By M. LAMER. Stanford University Food Research Institute, Studies on Food, Agriculture and World War II. (Stanford, California: Stanford University Press (London: Oxford University Press), 1957. Pp. xvi + 715. 100*s.*)

THIS book was mainly completed by 1952, with subsequent small additions. Four main topics are considered, the production and use of artificial fertilisers, with special reference to national policies during the last war and its immediate aftermath, the influence of monopolistic practices on fertiliser prices, the relevance and application of the principle of diminishing returns in fertiliser use (one of thirty-two chapters), and the factors affecting the demand for them (some ten pages only).

A real difficulty in reading and digesting this book is the extent of its descriptive material, which is too often insufficiently related to the economic analysis. Obviously, administrative, geographical and technical detail is needed to understand the various economic problems, as for example in assessing regional differences in the price elasticities of demand and the elasticities of substitution between fertilisers in particular situations; but much of the description has no *obvious* and immediate relevance to past, existing or likely economic problems in the use or production of fertilisers, and elsewhere it could probably have been condensed.

These strictures apply particularly to much of the information on the war and post-war policies in various countries. Interesting experiences which might illustrate some important economic aspect of fertiliser use or production are often described but insufficiently analysed, as for example, various national subsidy schemes. The U.S.S.R. is treated extensively (in

two long chapters), but here the descriptive overloading is heavy and important issues are raised but insufficiently explored. The author argues that the U.S.S.R.'s fertiliser policy has been economically inadequate, but he does not really show that a better allocation of resources between fertilisers and other goods could have been achieved, given on his own evidence that gypsum was in short supply and mostly all needed for cement and building-plaster and that the use of it and of lime (pre-requisites of successful fertiliser use in many parts of the U.S.S.R.) presupposed a more efficient rural transport system. Or again he describes the uneconomic use of artificial fertilisers on certain crops (particularly cotton and sugar-beet), but devotes very few lines to explanation. Is this misallocation due to the Russian refusal to recognise the Malthusian principle of diminishing returns (p. 80), or is it due to scientists thinking in technical rather than economic terms, or to the Communists' " principle of material incentive " (p. 582) being applied to sugar, cotton, tea and citrus production but not to other crops, or to all of these reasons and to others?

On the side of fertiliser production some of the most interesting (and related) developments in recent years have been the deconcentration of the German and Japanese fertiliser industries since 1945, the free availability to all the Allies by the Treaty of London in 1946 of about 40,000 I. G. Farben patents, the growth of Imperial Chemicals Industries into one of the most important international producers of chemical fertilisers, and the dramatically reduced importance of cartels. The author provides an extremely useful account of these developments, together with a summary of the pre-war cartels and other restrictions on competition. But he firmly eschews any attempt to appraise the effects of monopolistic influences on economic efficiency, although various footnotes indicate a strong static, marginalist approach; the name of Schumpeter is ominously missing from his pointers to relevant theoretical reading.

The short sections on relationships between fertiliser inputs and output changes and on the demand for fertilisers contain much interesting information, as for example, the German, Russian, British and American data on yield responses to fertiliser inputs and on diminishing physical marginal productivity. But all the time one wishes that the author had explored his subject more fully, to indicate its intricacies and to avoid apparent inconsistencies. Although he refers several times to interactions on output of different fertilisers simultaneously applied, he in effect ignores the possibilities of substitution between the main fertiliser groups in his theoretical treatment of diminishing returns and uses a single factor analysis throughout, when other concepts would have been more meaningful.

Twice in one chapter he quotes a statement of Fritz Baade (from *Brot für Ganz Europa*) that in 1939 Europe was using about 20% of the artificial fertilisers which would have given " optimal yields " at that time; but he does not indicate the limitations of this "guestimate." He accepts Baade's

statement that the " law " of diminishing returns is " economically inoperative in Europe " (p. 79), but later cites the " law " as a significant influence in explaining the limited effect of fertilisers in sustaining or increasing yields in some European countries during the war years (p. 596). Again at one stage he writes " the rate of application depends primarily not upon fertilizer prices but upon farm income " (p. 85), and he quotes statistical analysis in support, but then much later (pp. 617–19) he stresses price as the limiting factor on consumption. The statements are not inconsistent; they are respectively valid for different periods and different economic circumstances, but this is not made clear. The " price–consumption " relationship (p. 618) between the price of nitrogen and the consumption level of all fertilisers in various European countries gives an arc elasticity of around 3·0. It is hard to see this relationship's theoretical validity or practical significance.

Nevertheless, despite objections to its analytical content, the evidence already quoted should illustrate that this work is an extremely valuable reference or source book for an economist considering or undertaking research on fertiliser production or use.

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Western Enterprise in Indonesia and Malaya. By G. C. ALLEN and A. G. DONNITHORNE. (London: Allen & Unwin, 1957. Pp. 321. 25*s*.)

THIS book will be used by many who disagree with its main conclusions. Compact and readable, it has assembled much new material about these countries' economic development. We may hope that many Asian economists will try to counter its main thesis with a comparable wealth of material. The authors disclaim any intention of defending Colonial enterprise. But the picture which emerges (surely intentionally) is that Western political control contributed very considerably not merely to profits but to well-being here. A book which brings a wealth of facts to support such a thesis can hardly be accepted as non-controversial by Asian economists, but it would be unfortunate if it were treated as merely a polemic.

The controversial effect arises not mainly from distortion, but from a basis of selection which will probably strike Asian readers as unnatural. For this book is neither a general economic history (which would have given far more attention to public finance, trade policy, training, labour policy, currency and the like) nor merely a study of the businesses, publicly or privately owned, which Europeans have built up in the area. Most of the original material, it is true, deals with these businesses; but the literature has been fairly fully surveyed to present this material in terms of one particular impact on these countries, namely the effect of enterprise in bringing appropriate new

economic activities into being. Other aspects are treated lightly; this is the central theme.

We begin with a brief economic history of successive phases of Dutch policy in Indonesia and the course of development in Malaya. In general, this is a model of concise and factual summary, but a sharper contrast could have been drawn between the Liberalism of Raffles and later Dutch Liberalism. The relation of the Chinese to Western enterprise differed significantly in the two systems.

The second chapter, on the instruments of Western enterprise, is probably the kernel of the book. Here is much new information about the agency houses, hitherto largely neglected; and also a skilfully drawn and detailed contrast between the roles of Government in the two areas. It is to be hoped that the brief comparison of the roles of Government in Indonesia and Japan may one day be expanded.

Five chapters on agriculture bring together Government and private research and development activities. The analysis of land tenure and of the changing role of management is useful, and the contrasting effects, for example, of the sugar and rubber industries, because of their different factor requirements, are well brought out. But the emphasis on adaptation of economic methods makes the occasional comments on labour and social structure both tantalising and perhaps oversimplified. The dependence of several minor crops on skilled Western leadership is shown in some detail, and one is left wondering how the results of the Indonesian Government's current research will be transmitted into actual economic operations. The Malayan Government's pre-war preoccupation with paddy, and Mr. Bauer's revelations concerning smallholders' rubber deserve fuller treatment.

The interactions between European and Chinese mining, the relative isolation of Japanese mining, the active mining policy of the Dutch Government and the difficulties of the international oil companies are next considered. There appears to have been insufficient reference to American studies and comment here, and also to capital flotation activities.

Two chapters on banking give us important new information on the institutions supplying credit, though the brief sections on currency are less valuable. The Dutch Government pawnshops probably merit more attention.

Two chapters on Shipping and Public Utilities show the importance of private shipping syndicates, especially the K.P.M. and the Tanjong Pagar Dock Company. Perhaps too little credit is given to public transport development in Malaya. The International Bank Mission has recently recommended more feeder roads in comparison with main roads; but Malaya's prosperity owes much to vigorous road and railway development.

The chapters on Commerce and Manufactures divide the processing activities and some of the problems of organisation between them. Arrangement has presented some difficulties here, but there is plenty of useful new material.

The final assessment—" *Tantae molis erat* . . . to build the structure that is now tottering "—expresses sensitively the outlook of an overseas European entrepreneur group, whose culture heroes might well be Raffles and Ridley, Lampard and Anderson: see the great industries, prosperous trades, ports and hospitals, our work, now in peril.

The young men now running these countries see the other side. Struggling to build nations from plural societies; to prevent earlier, irresponsible, population policies from swallowing up any capital they can create; to remedy distortion and neglect in education—to them the industrial revolution is a fact of history, warped for them by Colonial rule, its agents foreigners and well paid.

The Asian view is not all distortion; but there are many facts in this book which could help towards a sounder relation between Asian development and foreign enterprise. This is an important objective, and one may regret that a more comprehensive selection was not made, which would have made truth more palatable.

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Pioneer Peasant Colonization in Ceylon. A study in Asian agrarian problems. By B. H. Farmer. (London: Oxford University Press for the Royal Institute of International Affairs, 1957. Pp. xv + 387. 55*s*.)

With a typically South Asian density of population and a rate of population increase which is among the highest in the world, the most striking feature of Ceylon's economy is that the Dry Zone, in spite of the colonization policy initiated in the nineteen-thirties and since 1948 accelerated, still "remains that rare phenomenon in Southern Asia, a region which makes up two-thirds of a country but is sparsely peopled." Consequently the question of how much increase in food supplies further settlement can achieve is of great practical importance; to investigate it fully is the main purpose of this book.

Only a geographer can answer it with authority, since in the first instance it is a question of land potential. But other factors, economic, agronomic, social and political, must also be taken into account, and require the wider qualifications of sound judgment and social percipience possessed by Mr. Farmer. As a member of the Ceylon Land Commission he has been able to acquire that sort of understanding of a country which as a rule is attainable only by the permanent official, never by the visiting expert. The result is a work of originality and value, both as a study of a particular problem and as an essay in the economics of peasant farming.

His conclusion, after thorough examination, is that further settlement is likely to be successful, with some changes in the present methods, chiefly

the use of soil surveys and better selection of colonists. Colonization is necessary both for the relief of land hunger and for the production of staple foodstuffs. But as to the part which Dry Zone colonization can play in the economy of Ceylon, he is much less optimistic than earlier investigators, in particular the International Bank Mission. Since the rate of population growth is rising, further colonization at the fastest possible annual rate can be expected to feed at most one-third of the annual increase in population in ten years' time. " Other solutions of the population problem will have to be found."

As a corollary to this main theme, there arises the question of the best form of settlement, evidently as contentious in Ceylon as anywhere. The International Bank Mission favoured large blocks of land for capitalists; young Marxists want collectives. Mr. Farmer, though not opposed to these alternatives, favours peasants. If an eclectic solution is tried, peasant colonization schemes should have a place. It is the only method which is politically realistic and economically sound. The strength of this argument lies in the weight of evidence adduced in support of it; for dogma still flourishes round " the peasant," while field investigations are now all too frequently bogged down in " techniques of evaluation."

But there is, none the less, an evident need to encourage a dynamic element in peasant society. " The landless are not necessarily inefficient; but they are also not necessarily efficient." Seeing that there is some incompatibility between the two aims of settlement, the relief of land hunger and increased food production, he recommends that there should be two types of peasant colony, one to relieve population pressure, with small lots and conditional tenure for the landless, the other to be " frankly economic," with individual freehold tenure for specially selected good cultivators, not necessarily landless, and with opportunity for acquiring more land.

The practical difficulties of this dual approach, as Mr. Farmer recognises, would be very great. Confidence in the eclectic solution here seems to need stronger justification. It might be more convincing if the proposal for two types of colony had taken shape as a scheme for adjusting types of settlement to the different conditions of irrigated and dry land hill farming. Mixed agrarian structures often do work well, because different types of farming require different size optima and timing of labour supply. But the wisest use of irrigated land in the Dry Zone is cultivation of paddy, in which Mr. Farmer insists that there are no economies of scale. There is evidently a need for credit organisation, and for technical progress through soil-conserving methods of cultivation. Would not concentrating the hope of higher productivity on the more favoured type of settlement mean that governments would default on the job of building up a general framework for advance through capital formation in credit co-operatives, and for technical progress through an advisory service? These provide a dynamic in highly productive farming systems, peasant or otherwise, through inter-

action between official guidance and individual enterprise. Though impatience with these conventional but well-attested methods is natural, wherever officials of the right sort are lacking—as they usually are—it is difficult to see how the task of raising the general level of agricultural efficiency in any country can be tackled without them.

DOREEN WARRINER

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American Economic History. By G. SOULE and V. P. CAROSSO. (New York: The Dryden Press, 1957. Pp. 654. $6.00.)

An Economic History of the United States since 1783. By P. D'A. JONES. (London: Routledge & Kegan Paul, 1956. Pp. 280. 21*s.*)

A Short Economic History of the United States. By A. BIRNIE. (London: University Tutorial Press, 1956. Pp. 146. 7*s.* 6*d.*)

TEXT-BOOKS on the economic history of the United States continue to pour off the press. With the anticipated swelling of the American college population, the market is likely to become big business in this, as in other fields, and publishers and college teachers appear to be competing bitterly to acquire hegemony over it. The latest challenger is a rewritten and expanded version of George Soule's *Economic Forces in American History.* Written with college students in mind, this provides 571 pages of text and pictures for a term, or a year's course, together with a teacher's manual which assumes a sub-standard teacher in need of pre-digested questions and answers. The book is divided and subdivided into a multitude of short sections with material arranged both chronologically and topically. Every conceivable aspect of the subject is treated in clear and simple terms which summarise the latest monographic and statistical material, and there is an admirable bibliography. The authors' treatment is so painless and factual as to provide little indication of the problems involved in analysing economic growth. Too emasculated to rank as a real history book, this volume could easily be re-arranged alphabetically into a "Young People's Encyclopaedia." Like most of its competitors, it will serve no useful purpose in British schools or universities, which demand more intellectual fare.

In this connection one welcomes the publication of two books written by Englishmen for English students. Mr. Jones' volume is a workman-like text-book of a reasonable length with a sense of proportion and of the topics which an English reader is likely to find most important. It is packed with information and summarises clearly a judicious selection of major monographs. The author is more cogent on the twentieth century than on earlier periods, which are thinner and more sketchy, and there is a certain lack of depth. A somewhat untidy arrangement involving reference back and forth to topics treated elsewhere is a tell-tale indication of a lack of underlying themes which would have given unity and intellectual stimulus.

As a result, the book will have only a limited appeal to the better class of undergraduates. On the other hand, Mr. Birnie, in his brief introduction to American economic history, succeeds admirably in keeping his eye on the main essentials. With clear, bold strokes he outlines a consistent story, which, though faltering in the critical mid-nineteenth century, provides on the whole a useful starting point for beginners.

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Foundations of Inductive Logic. By ROY HARROD. (London: Macmillan, 1956. Pp. xvii + 290. 24*s.*)

THE problem with which Mr. Harrod is primarily concerned in this book is that of vindicating inductive inferences, and in particular those passing from evidence about the past to conclusions about the future. He is dissatisfied with the opinions, now widely current among philosophers, that such passages of thought either require no justification or are to be justified pragmatically by their success in making correct predictions; and he attempts to ascribe a high probability, in suitable cases, to an inductive conclusion by the use of a purely deductive argument which (unlike those propounded by Keynes and Sir Harold Jeffreys) requires no assumption about the nature of the universe as a major premiss. Since Mr. Harrod has written his book in order to put forward this argument and develop its consequences, it would be lacking in respect to the seriousness of his intention not to concentrate attention in a short review upon Chapter III of the book, where this argument is expounded.

In this chapter Mr. Harrod proposes to give a deductively valid reason which justifies passing from " the mere fact that things have been found in experience to be thus and thus " to " holding that they will continue to be thus and thus for the time being " (p. 50). He is not here concerned with justifying belief in general laws, but in justifying belief that a " continuity " along which I am at this moment " travelling " will continue for at least a limited period in the future (p. 52). The first stage of his argument is the crucial one; in order to discuss it I shall express it in a more exact way than he has done (pp. 52–3).

Suppose that at noon Smith is aware that his field of experience contains a sound (for example, a musical note) about which he is completely ignorant except for a knowledge that it has continued for some period of time, say d seconds. Suppose that at noon Smith predicts that the sound will continue for a further period lasting for at least one-tenth of the time he knows it has continued, and that he makes similar predictions all the time until the sound comes to an end, which it does at (say) b seconds after noon. This is equivalent to saying that, for every y such that $0 \leqslant y < b$, he makes the prediction at y seconds after noon that the sound will continue for $\frac{1}{10}(d+y)$

seconds. The period during which he is making predictions, the period from noon to noon + b seconds, can be divided into two parts during the earlier part of which, lasting (say) c seconds, his predictions are correct, while during the later part, lasting $b - c$ seconds, his predictions are incorrect. The relationship between b, c and d is then $\frac{c+d}{b+d} = \frac{10}{11}$, which is equivalent to $\frac{c}{b} = \frac{10}{11} - \frac{d}{11b}$. If d is supposed to be very small as compared with b so that the last term in this equation can be ignored (and Mr. Harrod must be assumed to suppose this), the equation reduces to $\frac{c}{b} = \frac{10}{11}$, and states that, during the initial ten-elevenths of the period during which Smith is making his predictions, all his predictions will be correct.

Generalising the argument by substituting $1/x$ for $\frac{1}{10}$ throughout, Mr. Harrod concludes by saying that the certainty that Smith will "be right x times for every once" that he is wrong, "in accordance with the traditional notation, gives a probability of being correct of $x/(x+1)$" (p. 53). By taking $1/x$ sufficiently small, this fraction can be made to approach 1 as closely as may be desired.

The plausibility of Mr. Harrod's argument arises, I think, out of the somewhat inexact manner in which he has expounded it. Instead of using symbols to denote the periods of time in question, he refers to a belief that the "continuity [on which Smith is travelling] will continue for a length constituting at least one-tenth of the length for which it has already proceeded," and speaks of such a belief being entertained "continuously from the beginning to the end of the journey" (p. 53). Thus, for the purpose of his argument, Mr. Harrod is regarding the journey as beginning at the moment when Smith first starts holding these beliefs (that is, making his predictions). But if so, the argument presupposes that the beginning of the journey does not coincide with its end: that there is some period of time during which Smith can make his predictions. In my symbols the argument presupposes that $b > 0$. For if $b = 0$, the fractional symbol $\frac{c}{b}$ has no meaning and the equation $\frac{c}{b} = \frac{10}{11}$ is a nonsense expression. Without the assumption that the journey has a non-zero length, Mr. Harrod's statement that the beliefs will be "right during the first ten-elevenths of the journey and wrong during the last eleventh" (p. 53) signifies nothing whatever. And to suppose, either with certainty or with some probability, that the journey will continue for some length of time into the future is to assume exactly what Mr. Harrod's argument is designed to establish.

My exposition and criticism of Mr. Harrod's argument has been made on the assumption that predictions are made, as he says, "continuously from the beginning to the end of the journey." But perhaps I have taken Mr.

Harrod's language too literally; and he is really thinking of the predictions as being made not continuously throughout the period in question but at small regular intervals (for instance, intervals of a second) throughout this period. This interpretation is borne out by Mr. Harrod's using such language as " being right x times for every once that we are wrong," which, strictly speaking, does not make good sense if an infinite number of predictions are involved. But the argument fares little better on this alternative interpretation. Since b will now denote the total number of predictions, b will not be less than 1 (if the first prediction is made at noon); so the fractional symbol $\frac{c}{b}$ will have a meaning without presupposing that the sound will continue after noon. But if the sound ceases immediately after noon, will not Smith make only one prediction and that one be false, so that the proportion of his predictions that are true will be 0? [Mr. Harrod, on p. 58, admits that his theory " breaks down for very short distances." But he attributes this to the fact that our experience consists of discrete parts (" *minima sensibilia* "), whereas the breakdown derives from the requirement that predictions are only to be made while the sound is continuing.] So, on either interpretation of Mr. Harrod's argument, a prior non-zero probability of the sound's continuing into the future is, I think, necessary to justify the ascription of a non-zero probability to the correctness of a belief in its continuance.

Mr. Harrod's readers may well be misled by his metaphor of a traveller travelling along a path of unknown length and making predictions, either continuously or at regular intervals, as to how far the path will continue. The metaphor is, I suggest, misleading because a traveller can always look ahead sufficiently to know whether or not he has come to the end of his journey, whereas such an ignorance is exactly what gives rise to the inductive problem. Mr. Harrod declares (p. 53): " All that nature contributes to the argument is a continuity. That is innocent enough in all conscience!" But, for his argument to hold, nature must contribute a continuity which has some probability of continuing into the future, and this, surely, is not at all innocent, since it begs the whole question at issue.

Most of the rest of the book is concerned with treating other problems of inductive logic in the light of the doctrine of Chapter III. On pp. 247-8 Mr. Harrod puts this doctrine in a new way by saying that " it is quite proper to use the situation involved in having experience, that is essentially travel on a continuity, for a *definition* of probability. Probability may be *defined* as the frequency represented by the number calculated in the manner prescribed [in Chapter III] " (my italics). This is surely quite inconsistent with Mr. Harrod's discussion of definitions of probability in Chapter II: it would, I suggest, make the problem of vindicating inductions about the future a " bogus problem," a view against which (as he says) the book is " conceived as a protest " (p. 20).

In Chapter IV on "Inverse Probability," however, Mr. Harrod has got hold of an ingenious and important idea. He is concerned with the possibility of saying something about the probability of the hypothesis that all but a small fraction of P's have Q on the basis of knowing of a sample of P's that all of them have Q, but without attaching any prior probability to the hypothesis. I found Mr. Harrod's discussion hard to follow, partly because he says that he is "in substantial agreement" (p. xv) with Professor Donald Williams' invalid solution of a related problem. But it seems to me that Mr. Harrod's method for saying something about the probability of the hypothesis is, in its essence, the application to a special case of the valid general method of "estimation by confidence intervals" which has found a place in most treatises on mathematical statistics, since Professor Jerzy Neyman invented and justified the method in his celebrated paper of 1937 (*Philosophical Transactions of the Royal Society*, Series A, Vol. 236, pp. 333 ff.). Admiration at Mr. Harrod's achievement in hitting, presumably quite independently, upon the germ of the "confidence interval" idea will be mixed, in the minds of some of his readers, with regret that he has not connected his treatment of a special case of "statistical inference" with the recent great developments in this theory which have been made by mathematical statisticians.

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NOTES AND MEMORANDA

THE SUPPLY FACTOR IN THE THEORY OF THE CYCLE—SOME COMMENTS

I

THE most interesting proposition in Mr. Sargent's paper certainly is the proposition that a Hicksian system may stay at the ceiling for an indefinite period. His proof, however, seems to be defective, and is in need of supplementation. Sargent's criterion reads:

$$(10^*) \qquad \frac{A_t}{\overline{Y}_t} - k\left(1 - \frac{c+v}{1+A} + \frac{v}{(1+A)^2}\right) \gtreqless 0$$

Where the symbols denote:

A_t autonomous investment;
$\overline{Y}_t$ the "desired" level of income or output, defined as—$Y_t = (1+A)Y_{t-1}$
A the rate of secular growth of output;
k (>1) the ratio of actual to desired output at the moment the ceiling is struck;
c the ratio of consumption to income;
v the accelerator.

It may be noted that aggregate output will exhibit a constant secular rate of growth only if autonomous investment assumes the same rate of growth: $A_t = A_0(1+A)^t$; furthermore, Sargent's criterion applies not only to his own system (5) (duly simplified by disregarding inventory changes) but also to the original "elementary case" of Hicks, as one sees at once by putting in equation (10) alpha equal to infinity. Lastly, the criterion is not changed if we remove from Hicks' elementary case the assumption of "unproductivity" of autonomous investment, which Sargent retained in equation (5); this can be done mostly by simply inserting a term: $-A_{t-n}$, where n is the period of gestation,[1] an insertion which does not change the value of the ratio $A_t/\overline{Y}_t$, which alone matters for the first term in Sargent's criterion.

The full import of the criterion can be seen only if use is made of certain properties of the model which Sargent apparently was not aware of. The desired level of income,[2] $\overline{Y}$, is given by the solution of the inhomogeneous equation, and equals the inhomogeneous term in the basic difference equation times the "super-multiplier" H. Hence the first term in equation

[1] See in this respect my paper "Critical Notes on the Acceleration Principle," *Quarterly Journal of Economics*, May 1954, Part II, especially p. 265.

[2] It was called the trend rate of growth in the paper quoted in footnote 1, p. 268.

(10*) is equal to $1/H$. Evaluating the super-multiplier [1] for Sargent's system (5) allows us to rewrite (10*) as:

$$[1 - k(1 + \alpha)/\alpha]/H \geqq 0$$

But for positive H this expression is always negative.

Obviously we have proved too much. Sargent's criterion is, in fact, too severe. His condition for staying on the ceiling is that the ratio $A_t/\overline{Y}_t$ after hitting the ceiling retains at least the value k which it assumes at the moment of striking: and Sargent develops the criterion by putting the ratios $A_{t-1}/\overline{Y}_{t-1}$ and $A_{t-2}/\overline{Y}_{t-2}$ equal to k. In fact, these ratios will differ: in the standard case of an explosive solution of the homogeneous equation superimposed on the desired path of income, the ratio k_{t-1} would exceed k_{t-2} if the degree of divergence of the solutions of the homogeneous equation exceeds $(1 + A)$. Let us put $k_{t-2} = k$ and $k_{t-1} = k + h$, where $h > 0$. We obtain the modified criterion—

$$(10^{**}) \qquad \frac{1}{H}\left[1 - k\left(\frac{1+\alpha}{\alpha}\right)\right] + h\left(\frac{c+v}{1+A} + \frac{1}{\alpha}\right) \geqq 0$$

The negative first term may be very small in absolute value (if H is very large) and thus be outweighed by the positive second term.

No short cut is apparent to evaluate h in terms of the given parameters.[2] But it seems worth noting that even for $k_t = 1$, the pressure of autonomous investment can be so large that $Y_t \equiv \overline{Y}_t$ will stay at the steadily expanding ceiling. We have in mind the case in which the economy starts "on a suitable track" ($Y_1 = Y_0(1 + A)$) and therefore follows the exponential path indicated by the super-multiplier. If A is larger than the economic equilibrium value,[3] the additional demand at t for both capital goods and consumer goods causes an over-utilisation of existing capital stock and induces investment. This process is permanent; in other words, capacity, although increasing rapidly from autonomous and induced investment, never catches up with demand, and if utilisation is driven to the ceiling it will stay there.

II

In Sargent's paper the proposition here discussed is only a by-product; primary significance is attached to the introduction of a *supply equation*, Hicks' model being considered as representing demand only. It is scarcely

[1] For Sargent's system:

$$1/H = \frac{\alpha}{1+\alpha}\left(1 - \frac{c+v}{1+A} + \frac{v}{(1+A)^2}\right)$$

For realistic values of the coefficients the super-multiplier may be very large. It should be noted, however, that it is not to be applied to A_t, but to $A_t - A_{t-n}$, which in the elementary case equals $A_0 A(1 + A)^{t-1}$.

[2] $1/A_0 = (z_1 R_1{}^t + z_2 R_2{}^t)/(1 + A)^t - (z_1 R_1{}^{t-1} + z_2 R_2{}^{t-1})/(1 + A)^{t-1}$ where the zR terms are the solution of the characteristic equations of the Hicks model and the Sargent model respectively.

[3] Economic equilibrium is characterised by increasing output being produced at minimum average cost. For the Hicks elementary case: $A_e = (1 - c)/(v - 1)$, slightly different from the Harrod–Domar rate $(1 - c)/v$, because the latter model has no consumption time lag.

necessary to defend Hicks against the accusation of inconsistency brought forward frequently in Sargent's paper. For Sargent has done so himself! "There is no reason why we should not at the same time assume perfect elasticity in *the long* run (as the acceleration principle demands), and an exceedingly low elasticity in the short" (p. 639). Contrary to Sargent's assertion (*ibid.*, footnote 1) the supply equation of the type $Y_{t+n} = D_t$ (which expresses perfect long-run adjustment of supply to demand D_t) leads to the Hicks model. For $n = 1$ the elementary model states that in the period $t - 1$ the additional demand for commodities is satisfied by a short-run increase of production beyond the minimum of average costs, creating an output equal to ΔY_{t-2}, and that in the period t equipment is produced to enlarge plant commensurately, and to allow in subsequent periods to produce the additional output at minimum costs; the case of entrepreneurs needing more time to order and to obtain additional equipment is covered by the extended Hicks model (equation (17.1) in the Mathematical Appendix).

Similarly no inconsistency would arise if we interpret the Hicks model as applying to oligopoly with reserve capacity and constant short-run price: a firm may very well have reserve capacity and use it for satisfying short-run oscillations of demand, and yet, if the expansion in demand *lasts*, decide to *increase* plant; the time unit in the elementary model would have to be chosen correspondingly longer or we would have to apply the extended model.

There are, however, other reasons to be dissatisfied with Hicks' models. To apply the elementary one we have to make the bold assumption that the consumption time lag equals the "reaction time period" of the firms which over-utilise plant and are going to order more equipment and that the reaction time period equals the production period for the new equipment. The extended model does not require these assumptions, but is of indefinite order and cannot be subjected to fruitful mathematical analysis. Sargent's approach, which is amenable to such analysis, deserves therefore close scrutiny.

Hicks' elementary model is reinterpreted or rewritten as a demand equation:

$$D_t = cY_{t-1} + v(Y_{t-1} - Y_{t-2}) \tag{5.1}$$

or alternatively

$$D_t = cY_{t-1} + v(D_{t-1} - D_{t-2}) \tag{14.1}$$

In other words, firms that experience a change in output or in the demand for their product are still supposed to demand more plant and equipment in the subsequent period. The corresponding supply equations read: [1]

$$Y_t = (1 + A)Y_{t-1} + \alpha(D_t - Y_t) \tag{5.2}$$

$$Y_t = (1 + A)Y_{t-1} + \alpha(D_{t-1} - Y_{t-1}) \tag{14.2}$$

[1] The possibility of increasing current supply above or reducing it below output by inventory adjustment is briefly discussed by Sargent, but disregarded in the principal models.

where α denotes the entrepreneurial "readiness" to vary their output away from the secular trend.[1]

In a stage of growth in which the ceiling is not yet reached [2] readiness can refer only to the willingness not to the ability of the producers to satisfy the demand.[3] Willingness may be absent wherever production is not production on order, but for the market, because the current market price, expressing the effect of expanding demand, may not be generally expected to *last*. The readiness coefficient is applied to gaps between actual demand and actual output of which the mechanism is easier understood in the second version $(D_{t-1} - Y_{t-1})$. Gaps presuppose a selective mechanism to separate the buyer who is to be satisfied, from the unsatisfied remainder. Two alternative mechanisms seem to be available, the price mechanism and rationing, which leads to backlogs of orders. Considering the price mechanism as the general case, we see that demand would denote the quantity demanded at the price vector p_t ruling at the *beginning* of the period t; and that a part of the demand would be excluded by the price rise from p_t to p_{t+1} *during* the period t, the remainder representing the *effective* demand during t.[4] One could justify the application of the readiness coefficient to the gap by pointing out that, the larger the gap at the beginning of the period, the higher the price rise, and the higher the price rise, the greater the willingness to expand output. (Similar considerations would apply in case of rationing.)

We shall not discuss these mechanisms in detail but limit ourselves here to contrasting the *demand* equations (5.1) and (14.1). They have in common the term cY_{t-1} expressing the demand for consumer goods; it implies that the part of demand which in period t was excluded by rising prices [5] will be shut off forever. The reason is that in any period t the consumer is supposed to spend for consumables as much as his budget at the *effective* price p_{t+1} allows him to spend.

The time profiles of the demand for investment goods, however, differ in both approaches. None is quite satisfactory. (5.1) states that the part of producers' demand excluded in period t by higher prices will also be excluded forever. In period $(t + 1)$ the demand from autonomous investment: $A_{t+1} = A_0\ (1 + A)^{t+1}$ is independent of the degree at which the

[1] For the system (14) no criterion for staying at the ceiling is given.

[2] The period of gestation cannot exceed the time unit applicable in the model: otherwise no additional output equal to $\alpha(D_{t-1} - Y_{t-1})$ would be available in t. The time unit is presumably determined by the reaction period of the producers who want to increase plant; the problem of the consumption time lag is here again disregarded.

[3] In the analysis we shall always choose the illustration of expanding demand; the application to the opposite case is easily made.

[4] The effective demand during t equals, therefore, $D(p_{t+1}) = Y_t$; the current outlay during t equals $p_{t+1}D(p_{t+1})$.

[5] Because of the time lag in consumption it is possible that there is no supply deficit in consumables: the secular increase in production is large enough to satisfy current demand. If the production of consumables equals cY_t, a deficit can arise only for $a > 1$.

demand A_t was satisfied in t; and equally important, the induced demand for investment goods in t is proportionate to the preceding output change and excludes that part of the induced demand in $(t-1)$ which could not be satisfied. However, those who refrain in $(t-1)$ from buying investment goods did so because they doubted that they could obtain in the subsequent period correspondingly higher prices for their products. These doubts cannot conceivably persist when, in an ever growing economy, prices continue rising; one would expect therefore a revival of the suppressed demand of earlier periods.

Some such reflections may have induced Sargent in (14.1) to replace the induced investment term of (5.1) by $v(D_{t-1} - D_{t-2})$. But here other difficulties arise. Both D_{t-1} and D_{t-2} are quantities that investors and income receivers *wanted* to buy at the prices prevailing at the beginning of the period in question, but did not actually buy in full. Shall we assume that the producers who feel induced to expand plant, take into account the *potential* demand, including the portion which would have become effective only at lower prices than the prevailing ones? What knowledge can the producers have of these quantities? It is a projection of a peculiar kind which the producer in this model is supposed to undertake—different from both the original concept of induced investment and from the more recent interpretation according to which the producers expand plant because they expect effective demand to *increase* at the same rate at which it has increased in the past.

Clearly micro-economic analysis has a hard time to justify Sargent's supply equations. The idea to separate demand and supply conditions is, we believe, a fruitful one, but it must be doubted that without introducing price explicitly, a real improvement of Hicks' model is possible.

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A NOTE ON THE HISTORY OF THE BALANCED-BUDGET MULTIPLIER

EVER since the publication in *Econometrica*, 1945, of the famous article on "Multiplier Effects of a Balanced Budget," by Trygve Haavelmo, the theory of the budget multipliers has been thoroughly discussed in a multitude of articles in most of the leading journals in the field of economics. This fruitful development of a theorem was clearly initiated by the path-breaking article by Haavelmo.

It seems, however, worthwhile to draw attention to the fact that the theorem of the balanced-budget multiplier was developed a few years earlier and independently of Haavelmo by Jörgen Gelting. In 1941 Professor Gelting published an article in the Danish *Nationalokonomisk*

Tidsskrift on the problems of financing public activities.[1] A translation of part of this article will reveal that the theorem in question was stated in a clear form by Gelting. Says Gelting (pp. 295 ff.):

"When the public sector collects more taxes from the private sector and uses the revenue for increased outlays, total employment will be increased exactly by an amount corresponding to the increase in outlays. This at least holds true when the marginal propensity to consume as well as productivity in the private sector are unaffected. . . .

"As the problem considered concerns not only labour but productive resources in general, "employment" may be taken to mean the disposition over productive resources in a general way. Assuming constant prices, employment can be measured by total factor payments.

"If the public sector collects a revenue from a certain group (X) in the private sector and transfers through the purchase of goods and services this revenue as a whole to a certain group (Y)—eventually to be identical with X—in the private sector, the private sector as a whole will, under the assumptions stated, have unchanged disposable income for consumption or saving. However, the transfer from X to Y increases employment. Thus assuming unemployment, the amount of idle resources will be reduced by an amount equal to the employment initiated.

"In a more precise way this can be proved under very abstract assumptions. Let U be the total (private and public) investment including public expenditures of any kind. Let further N be national income, S savings, s the (constant) propensity to save out of disposable income and T total tax revenue. If the fraction of income paid in income tax is t and if the income tax is the only tax prevailing, it follows that

$$N = U + U(1-t)(1-s) + U(1-t)^2(1-s)^2 + \ldots = \frac{U}{1-(1-t)(1-s)}$$

$$T = Ut + U(1-t)(1-s)t + \ldots = Nt$$

$$S = U(1-t)s + U(1-t)(1-s)(1-t)s + \ldots = N(1-t)s.$$

"As all prices are constant, employment and national income are proportional. The problem is to estimate the change[2] in N corresponding to a tax-financed change in U, *i.e.*, equally large increases of U and T. The change in T is partly induced by an increase in t. As a loss of income to other countries is not taken into account, it follows that $T + S = U$. Consequently, when T and U change by equal amounts, S must be unchanged. Total savings are thus equal to a constant K:

$$N(1-t)s = K$$

and thus

$$U = K\frac{s + t - st}{s - st}$$

[1] "Nogle Bemærkninger om Financieringen af offentlig Virksomhed," *Nationaløkonomisk Tidsskrift*, 79 Bind, 5 hefte, 1941, pp. 293–9.

[2] It should be noted that the purpose in fact is not to investigate changes in time series but to consider alternative equilibrium situations.

If it holds true that the increase in N, and thus in employment, exactly equals the increase in U, $N - U$ should be constant. As

$$N - U = \frac{U}{1 - (1 - t)(1 - s)} - U$$

it follows, however, that

$$N - U = K\frac{1 - s}{s}$$

This is—as should be proved—constant.

"It has been assumed that private investment is unaffected. However, this assumption does not seem very far from reality, as private consumption ($F = N - T - S$) is unaffected."

The theorem was further discussed by Kjeld Philip in his book (in Danish) on fiscal policy and economic activity.[1] This book was published in the spring of 1942. Philip arrives at the same conclusion as Gelting, but the analysis is carried one step farther, as the process is considered to be time-consuming. While Gelting's article from 1941 thus compares to Haavelmo's from 1945, Philip's contribution may to a certain extent be compared to the comments given by Haberler, Goodwin, Hagen and Haavelmo himself in the 1946 issues of *Econometrica*.

Needless to say, Haavelmo did not (because of the War) know of these Danish contributions when he wrote his article. Thus Haavelmo's contribution retains fully its originality. But for the sake of precision in the history of economic analysis it is worthwhile to draw attention to Gelting's original contribution from the war years.

It should, however, be added that Gelting does not consider his theorem as any original contribution. In his 1941 article he refers (on p. 295) to Chapter XXXI ("On Machinery") of Ricardo's *Principle*. And the following quotation (from p. 385 of the Gonner edition of *Principles*) clearly shows that in all fairness we should perhaps call the theorem of the balanced budget multiplier a Ricardian theorem:

> "If I were not called upon for a tax of £500 during the war, and which is expended on men in the situation of soldiers and sailors, I might probably expend that portion of my income on furniture, clothes, books, etc., etc., and whether it was expended in the one way or in the other, there would be the same quantity of labour employed in production; for the food and clothing of the soldier and sailor would require the same amount of industry to produce it as the more luxurious commodities; but in the case of the war, there would be the additional demand for men as soldiers and sailors; and, consequently, a war which is supported out of the revenue, and not from the capital of a country, is favourable to the increase of population."

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[1] *Det offentliges Finanspolitik og den økonomiske Aktivitet* (København, 1942),

THE OPTIMUM RATE OF SAVING: A NOTE

In his stimulating paper (Economic Journal, December 1956) Professor Tinbergen derives two conclusions which seem not to be justified.

(1) " . . . we make the assumption of the existence of a fixed 'capital coefficient,' *i.e.*, ratio between the additional investment and the resulting increase in future income . . . it is well known that for long periods values about 3 have been observed, whereas recently lower values down to $1\frac{1}{2}$ have been found. When using these figures we should not overlook, however, that they imply the assumption that all increases in incomes are due to increases in capital. This may be a considerable overestimate of what can be obtained by saving only. This state of affairs is illustrated also by the fact that the average saver gets much less increase in income as a consequence of his saving. A capital coefficient of 3 would imply a yield of 33%, whereas the ordinary saver usually gets only a few %. Even the entrepreneur-saver will often have returns of no more than 10 or 20%. There may therefore be scope to apply considerably higher capital coefficients in our interpretations, up to figures of, say, 20" (pp. 603–4). And also later, in conclusions: " A second tentative conclusion is that in order to explain observed personal rates of saving prevailing in most countries we must assume that either the capital coefficient is supposed to be much higher than the values usually now presented or the psychological discount rate is considerably higher than normal interest rates" (p. 609).

The difficulty of Professor Tinbergen is only an apparent one, and is a result of not clearly defined concepts. Capital coefficient expresses the relation between investment and *income* (more correctly: between investment and output), not between investment and *accumulation*. If capital coefficient is $k = 3$ and share of investment in national income is 10%, then investors may expect a return of 3·3% only, and not of 33%. The difference between 33 and 3·3% represents the increase of other people's incomes, and has to be subtracted as cost from the point of view of investors. If $k = 1\frac{1}{2}$, the return on investment will be 6·7%. The rates of return are relatively low because, by definition, they are computed with respect to the whole social capital and not with respect to the productive capital only (if total investment and not only productive capital investment is used in computing k). The rates depend also on the speed of growth of economy. Suppose the share of saving has risen from 10 to 20% of national income, causing k to increase from $1\frac{1}{2}$ to 2, then the rate of return becomes 10%. Thus observations and the theory are in full accord with each other.

(2) " If two characteristics [psychological time discount and the decreasing marginal utility] . . . of the utility function . . . are neglected, the problem becomes intractable; if total consumption over an infinite period is to be maximised, the maximum will be found to correspond to the highest savings rate possible, *i.e.*, 1, which evidently

is an unrealistic proposition. Even if the discount factor is introduced, this difficulty does not vanish. For values of *m* [psychological discount rate] below the rate of increase in income again the optimum rate of savings will be 1. For values of *m* above that rate it will suddenly fall down to zero. This evidently even qualitatively is not a realistic picture of the choice problem before us. These experiences should be kept in mind when the idea of an optimum rate of saving is loosely being discussed in terms of a ' maximum income or maximum consumption over a certain period.' Only the introduction of both the characteristics seems to make the problem a tractable one" (p. 609).

This conclusion is, however, far from being universally true. If the unrealistic assumption of the constant capital coefficient is abandoned the maximisation solution follows at once. And the assumption is unrealistic because one cannot expect that the increase in the rate of expansion of investment—which is implied by the rising rate of saving—will have no impact on the general efficiency of the economy, *i.e.*, that the law of diminishing returns will be inoperative. In fact, as the experience of countries which practice planning shows, the impact is strong and the limit of the productive application of additional investment appears to be reached very soon. Thus an approach implying a changing capital coefficient seems to be both more realistic and more promising in tackling the problem of the optimum rate of saving.

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THE SCOPE OF AUTOMATION

MAY I comment on some points raised in Mr. Hugh-Jones' "Note on Automation." (ECONOMIC JOURNAL, September 1957.)

(1) I do not consider pre-fabrication a form of automation but a method which favours the introduction of automation. That is why the wider use of pre-fabrication methods in building and shipbuilding brings these industries within the "scope of automation."

(2) I do not consider the death of small firms a feature special to automation. On the contrary, I have tried to show that, in many sections of industry, the small and medium firm can benefit from automation.

(3) Whether automation represents a "breakthrough," something new in kind, is an issue on which opinions are divided. Both, Mr. Hugh-Jones and myself, may claim many authorities in support of our opposing views. Mr. Hugh-Jones has certainly on his side Mr. C. E. Ayres, who in his *Theory of Economic Progress* wrote that "it is now generally agreed that all inventions are combinations of previously existing devices. Thus the aeroplane is a combination of a kite and an internal combustion engine."

There is also the by now famous example of the first continuous process flour mill built by Oliver Evans in 1784/5 and the verdict of Thomas Jefferson, who, called in for arbitration when other millers objected to the payment of royalties for Evans' patent, declared that Evans' elevator was "nothing more than the old Persian wheel of Egypt and the conveyor is the same thing as the screw of Archimedes."

Unlike test-pilots, economists cannot produce the big bang to prove a breakthrough. (Even the pilot's breakthrough has been achieved by adding "just a little bit" to speed.) After the invention of Watt's steam engine more than a century had to pass before the term "Industrial Revolution" was introduced by Jevons and used later by Toynbee. Then, too, innovations were limited to certain sections of industry, and life outside the manufacturing centres was hardly affected. Breakthroughs in production methods may, at the time, seem to lack the elements of suddenness associated with but not an essential part of revolutionary changes.

According to Schumpeter [1] a revolutionary change is marked by new industries and commodities, new factors determining the location of industry, a new level of costs, a new industrial balance of economic power, a "break in trends." According to Mr. Hugh-Jones, the fusion of electronics and production engineering does not represent anything markedly different from what we have experienced in past decades and centuries. In this he seems to disagree with a great number of writers on automation; it is this fusion which may be said to represent the decisive difference between traditional mechanisation and automation.

We witness the emergence of new industries (*e.g.*, electronics and atomic energy dependent on automation techniques), of new products (control equipment, computer-controlled machines and electronic brains), we can watch the self-testing and self-correcting actions of automated equipment and see control-towers equipped with television screens: is there really no case for stating that something new in kind has arrived? It comes as a surprise that this question is answered in the negative by an author who envisages a computing machine which, having learned the Theory of Games, replaces the human entrepreneur in organising production.[2]

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[1] J. A. Schumpeter, *Business Cycles*, Vol. I.
[2] E. M. Hugh-Jones, "Note on Automation," ECONOMIC JOURNAL, September 1957.

OFFICIAL PAPER

MR. KALDOR'S PLAN FOR THE REFORM OF INDIAN TAXES[1]

In the summer of 1955 Mr. Kaldor visited India to take part in a refresher course for University teachers of Economics. He was at that time busily engaged with the problems of the Royal Commission on the Taxation of Profits and Income in the United Kingdom, and this no doubt contributed to arousing his interest in the same line of taxes in India. Indeed, India's tax problems are such that anyone interested either in the general questions of public finance or in the special problems of India's economic development must sooner or later be led in this direction. For a country which aspires to be a major industrial power, the inability to collect more than about 7% of the national income in tax revenue cannot but have serious repercussions, on the smoothness if not on the tempo of development. Outlay taxes are numerous, and their height is considerable; they produce the lion's share of revenue. The share of income and profit taxes has steadily declined since the high point (of 60% of the total) reached during the War, in spite of rising money incomes. Hence there are strong reasons for a thorough examination of the structure of income and profit taxes.

In addition to a natural curiosity concerning the Indian tax position, Mr. Kaldor also had some private reasons for wanting to make an inquiry. He was fired by a missionary zeal for certain plans of his own, which neither the terms of reference of the Royal Commission nor the self-imposed limits of his book[2] had so far given him the opportunity of developing. The suggestion from influential circles in India that he should investigate direct taxation in that country was therefore gladly accepted. The result is the Report under consideration here. However one looks at the Report, it is an outstanding and remarkable achievement, especially considering the time within which it was accomplished (between January and March). Although most of the argument is familiar, it is evident that Mr. Kaldor's thought has developed in several directions since writing his contribution to the Minority Report of the Royal Commission and his book on the expenditure tax.

In India there was at first no very striking reaction to the Kaldor Report, beyond some, not always friendly, comments in the Press. By the spring of 1957, however, the difficulties into which Indian economic planning had fallen were apparent to all. Some dramatic gesture was almost a necessity, and there was a new and more experimental hand at the Ministry of Finance. Nothing could be more apt for the purpose, and Mr. T. T. Krishnamachari's

[1] *Indian Tax Reform.* Report of a survey by Nicholas Kaldor. Delhi: Department of Economic Affairs, Ministry of Finance, 1956. Pp. 139. 2*s.* 3*d.*

[2] *An Expenditure Tax* (1955).

first budget announced the intention to adopt immediately most of the recommendations in the Kaldor programme, although some of the most important can only come into operation a year hence. But the essential thing about the programme is that it is an integrated whole, not just a series of recommendations. The omission of parts, or the failure to use the recommended rates of tax (above all the ceiling of 45% on the marginal rate of surtax), can have a much more serious effect than if the various items were independent.

It should be noted that the Kaldor programme cannot have been adopted as a practical weapon against the present crisis, for it is essentially a long-period plan. The gestation period (that is, the period which must elapse before they attain either their maximum revenue or their maximum economic effects) of most of the new taxes is very long, especially that of the capital-gains tax, the gift tax and the annual capital tax, in the way in which it has been planned. The immediate revenue effects, even on Mr. Kaldor's not pessimistic estimates, can only be quite moderate, so that the main effects on the present situation will probably by psychological. For the immediate compression of consumer spending the Minister of Finance is clearly relying mainly on heavy increases in a number of taxes on outlay. It may well be, however, that Parliament would not accept these so readily had it not been for the adoption of the new taxes, which seem on the whole to have been well received initially, so far as they are understood.

The Kaldor programme, as has been said, is an integrated plan; it implies the introduction of four new taxes: (i) a tax on capital gains; (ii) an annual tax on total capital or wealth; (ii) a personal progressive expenditure tax; and (iv) a tax on all gratuitous transfers. The capital-gains tax, as it happens, is already on the statute book, as it was tried for a short period just after the War, but abandoned, it was stated, because the revenue was not worth the administrative trouble. The Kaldor species would be stiffer and more inclusive, and in particular would take account of transfers at death.[1] The annual tax on wealth would broadly follow the lines set out in Mr. Kaldor's book, and the same is true of the expenditure tax.

The gift tax, however, represents an interesting further development of Mr. Kaldor's views. The basic idea is that of a tax on all gifts or gratuitous transfers made during the year, whether *inter vivos* or by testament, which would be levied on the recipients, progressively with their total wealth. There is no doubt that this is the sensible way to do things. Even if a tax of this nature were, like British death duties, limited to transfers at death and five years previously, it would be a great improvement from every point of view (apart from narrow revenue and minor administrative considerations) on

[1] In the Finance Minister's proposals, however, transfers at death are excluded and the rates are substantially lower than proposed by Mr. Kaldor.

the present British system of death duties assessed on the decedent. If it proved administratively possible to bring all gratuitous transfers within the net it would completely eliminate troubles about gifts *inter vivos*, and would very largely remove the incentive to dissipate fortunes before death. The Kaldor plan would be for the gift tax eventually to take the place of estate duties, but in India at present this would not be administratively feasible.

So far as the capital-gains tax goes there is not much new to be said, since there is already a corpus of experience in working the tax in the United States as a separate levy and as a minor element in income tax in a number of other countries.[1] It is true that so far no country has collected much revenue from the taxation of capital gains, but this, as Mr. Kaldor has pointed out before, can be accounted for by the low rates in force, and to the failure to include transfers at death. As we have seen, it is a vital element in the Kaldor plan (not only from this point of view) that the maximum marginal rate of surtax should not exceed 45%, at which level it would not be unplausible to integrate income tax and capital-gains tax into a single tax on accrued income. In fact, this could provide a method of comprehensive treatment of fluctuating incomes. In India, since death duties are extremely weak, the revenue from a capital-gains tax would be all net gain, not largely at the expense of death-duty revenue as it would be in the United Kingdom.

The general arguments against the taxation of capital gains—provided that reasonable means can be found of controlling deliberate evasion of surtax by transmuting income into capital—is the check to lending and to the free transfer of shares. The arguments in favour, in India as elsewhere, rest on three propositions: that large capital gains are characteristic, almost inevitable, in a modern economy, that the opportunities for making them are confined to a small section of the economy and that the gains are characteristically spent and not reinvested. The factual evidence in support of these propositions is extremely slender, and so far as India is concerned there is virtually no evidence at all. There is, however, some *a priori* reason to suppose that easily traceable gains, such as those on the stock exchange, would be a much smaller part of total gains in India than in western countries. The advantages of a capital-gains tax in India are therefore somewhat problematical.

Kaldor borrowed the idea of an annual tax on wealth from the Scandinavian countries, but has developed his thought since he awarded it somewhat faint praise in *An Expenditure Tax*. The tax proposed for India would be simpler as regards valuation than has been the traditional practice, for assets would be valued only twice in the hands of each owner: once on acquisition, and once on relinquishment. This implies that assets could

[1] For an excellent account of the experience of other countries in the taxation of capital gains, see the Memo of the Inland Revenue, of January 7, 1952, printed as an Annexe to the Final Report of the Royal Commission.

stand at their original cost for many years, even decades. On transfer an asset would presumably not only attract a new valuation for the wealth tax (possibly at a very much higher rate), but also the capital-gains tax, the gift tax if it were given away or passed at death, and if it were sold, would increase liability to the expenditure tax. This seems to add up to a considerable incentive to avoid open transfers. From the macro point of view a wealth tax of this variety could lag far below current values, so that its yield in real terms could sink seriously. This is, of course, true of any tax on property which is not submitted to general periodic revaluation.

The equity argument in favour of the wealth tax (on which Kaldor puts much weight) is that no amount of discrimination against property income in income tax can ever compensate for the security (or if you like, power) which the possession of property confers, since these attributes are quite independent of the income derived from the assets. This argument perhaps deserves more attention in Indian than in British conditions, because of the high propensity in India to hold property in non-revenue-producing forms, especially gold and jewellery. Non-revenue-earning property is, however, much more difficult to trace and bring within the revenue net. We must return to this point later in relation to the general question of evasion. In the eyes of the Delhi administration at least, the strongest argument for the wealth tax is the extra information which it will entitle them to demand in relation to surtax incomes.

In urging that the wealth tax should include real estate,[1] not only in urban areas, but also agricultural property, and that on this side at least it should have a fairly low exemption limit, Mr. Kaldor has put his finger on one of the weakest spots in the Indian tax structure. For a country with an agricultural sector providing some 70% of the national income the contribution of farm incomes to taxation is ludicrously small. The land tax, which before the War was a major source of state revenue, has been reduced to a very minor source by the combined effect of the change in the value of money and the failure to hold a revaluation. On top of this the abolition of the Zemindari system of land ownership has strangled the infant agricultural income tax at birth, although, to be sure, there is a possibility that it may later lead to an increase of productivity.

It is a sacred tenet of Indian politics that the tiller of the soil is too poor to pay taxes; but this is by no means universally true. As the Panel of Economists which criticised the second Five Year Plan pointed out, it is the masses who will benefit most from development, so that it is only reasonable that they should contribute to its financing.[2] It should not be overlooked that their equally "underdeveloped" opposite numbers in many parts of East Africa are now paying amounts graduated with income from 30*s*. to

[1] The Indian Government has, however, rejected this suggestion, and has also raised the exemption limit higher than the Kaldor recommendations.

[2] Cf. *Indian Journal of Statistics*, special number, 1956.

some 150*s.* in personal tax, while in Nigeria the exemption limits of the new progressive income taxes are by no means high.

Important as this aspect of Indian public finance is, it lies mainly outside the Kaldor plan. We can deal briefly with the remaining item in the programme which the government has accepted: the progressive personal Expenditure Tax.[1] As in earlier statements of Mr. Kaldor's ideas, this is the part which has aroused the greatest interest and controversy. In this aspect of his Indian report, however, Mr. Kaldor has little to add to what he has published already. From the short-period point of view this tax has little to recommend it.[2] The revenue is quite unpredictable, and the tax is, moreover, assessable only at the end of the year, after the expenditure has taken place. Because of the inherent inequity of the tax in respect of large families or necessitous spending, methods of spreading liability have to be devised. Mr. Kaldor is now in favour of assessing the tax on a moving average of expenditure, in addition to the use of the quotient system for families. This would make the yield even more unresponsive to short-period fluctuations, as well as making it lower for any given rate structure. An argument in favour of the expenditure tax much emphasised by Mr. Kaldor is that expenditure is more difficult to conceal than income, and so the tax could be administered more accurately. It is true that in most countries revenue administrations check up declared income against apparent consumption, but this device is useful only in a very broad sense, to reveal flagrant understatements. And in any case it is powerless against expenditure abroad. Nor would it be much use in the circumstances so common in India, where expenditure in excess of income takes the form of subsidisation of poor relations, hangers on and so on. In Indian conditions the expenditure tax has a fortuitous attraction for the Union administration. Since it had not been thought of at the time the Constitution was drawn up, with its Union and State tax lists, the expenditure tax would accrue to the Union through its residuary powers. However, as things stand at present, it is the States rather than the Union who are most in need of additional revenue sources.

This account of Mr. Kaldor's plans for India would be incomplete without mentioning the analysis of business-profits taxes in Chapters 7 and 8. Not only has Mr. Kaldor done some further thinking in this field since the Royal Commission reported, but the chaotic condition of this part of the Indian tax structure has long been recognised (although never before, I think, so well analysed). Profits taxation in India is entangled with a rank growth of allowances, deductions, surcharges and so on, partly following British practice, partly due to particular endeavours to stimulate saving and investment, but in several instances merely due to faulty drafting in the legislation.

[1] The rates, however, have been set substantially lower than those suggested.

[2] Cf. A. Prest, *Lloyds Bank Review*, October 1956.

A phenomenon which soon becomes familiar to those who are asked to make recommendations concerning the tax systems of "underdeveloped" parts of the Commonwealth is the way in which the import of phrases in the United Kingdom legislation (often put in to strengthen the hands of the administration) has been misunderstood, so that a slight difference of wording produces a quite unintended effect. This is true of the Indian provisions concerning expense allowances, which, after a list of *permissible* deductions, end up with a catch-all phrase which allows "any expenditure . . . laid out wholly or exclusively for the purpose of such business." In the British legislation an identical phrase is found, but it follows a list of *disallowed* deductions, and so enables the administration to challenge a wide range of marginal cases.

Mr. Kaldor would now like to go further in India than he felt it possible to proceed in the Minority Report, so as to confine normal deductions to those expenses which are "wholly, exclusively and unavoidably incurred in earning the profits of the year," thus turning the business profits tax virtually into a value added tax. Any further deductions would only be allowed temporarily and "as a matter of economic expediency." In a country such as India, where an increase in exports is vital to the continuance of development, it is not clear why the hands of entrepreneurs should be tied by disallowing all expenses for future profit earning except the purchase of physical assets. This, however, is not to deny that the expense-account provisions in Indian profits taxes are very much in need of some tightening, a process that will be even more important when the expenditure tax comes into play.

The most intriguing part of the Kaldor plan, however, is not the new taxes suggested, but the ingenious scheme (explained in detail in Appendix A) for a comprehensive Return to cover the whole field of personal taxation. This scheme is largely original, although a simple and more limited prototype is in operation in Sweden. If the particulars asked for could really be reliably obtained, even from the top 115 thousand tax-payers,[1] it would indeed be the answer to the revenue officer's dream.

The plan for the new Indian taxes relies very heavily on the success of this comprehensive Return, so that to evaluate the practicability of the plan it is essential to realise what is implied. The tax-payer is asked to supply annually seven statements, which together cover the whole of his transactions (at least against money), both of a personal and business nature. These are: (*a*) net wealth, *i.e.*, the change in totals over the year; (*b*) income return (as at present, but with business accounts attached); (*c*) gratuitous transfers (gifts made and received during the year); (*d*) purchase and sale of capital assets during the year: (i) income yielding assets and bar gold, and

[1] It is interesting to observe that not only the number of tax-payers in this group but also their total property are closely similar in India and Sweden, notwithstanding the enormous difference in size and population of the two countries.

(ii) assets for personal use including jewellery and works of art; (*e*) borrowing and lending during the year; (*f*) other capital and casual transactions, including sales and purchase of rights, leases and so on, as well as betting and other winnings; (*g*) personal expenditure, adjusted for exempted outlays under the expenditure tax (direct taxes and fines, funeral, birth (but not marriage) expenses, and certain medical charges). There can also be a deduction for spreading expenditure on purchase of durable goods made during the year, but the notional income for the year of past purchases (dating from the operation of the tax) for personal use must be added in: the net balance of purchases and sales, plus amounts of tax due owing to spreading in previous years.

The reason why the whole programme relies very heavily on this Return is that the taxes are devised to be self-checking. Each tax-payer is to be given a Code Number or description indicating his individuality and detailed tax-administration location. The object is to give complete identification (which by name in Indian conditions is extremely difficult), while preserving anonymity in certain transactions. All the returns in Statements (*c*, *d*, *e* and *f*) must be accompanied by a tax voucher recording the transaction. In principle, thus, all sales, purchases and other transfers can be " married " with the other side of the transaction, and while it might pay one party to conceal the transfer it will increase the tax liability of the other if he does so. Further, if a tax-payer makes an understatement in one account in order to evade one of the family of taxes, he will increase his liability to another. For instance, if he omits to add the purchase of a security to his property account he will increase his liability to expenditure tax.

In order to reduce the incentive to evasion Kaldor is insistent (as we have seen) that the present unenforceable marginal rates of surtax (reaching over 90%) should be reduced so that the maximum becomes 45%. Unfortunately, this recommendation has not been implemented by the Indian Government, and the new rates are very little lower than the old. It should be noted that in order for the counter-check system to work properly (even assuming the most favourable conditions), the rates of the whole family of taxes must be very carefully integrated with each other. If one gets out of line a new incentive to evasion is set up, so that the check works only partially, just as the low rates of the capital-gains tax in the United States still leave an incentive to substitute capital for income in order to escape the top surtax brackets.

Beyond these difficulties, which implicitly assume that both tax-payers and administrators can make the grade if they want to, lie two more serious considerations: (i) Is it reasonable to suppose that the administration, on the one hand, and the tax-payers, on the other, can adjust themselves to the new system without a major crisis? and (ii) Can the incentives for evasion of the whole set of taxes be held sufficiently in control to ensure that the

inequities of a new system that does not work will be less than those existing with the present standard of enforcement of the present taxes, quite apart from the possibilities of improving compliance to known taxes? Into the balance also must be thrown whatever weight we like to attach to the inequity of excluding capital gains from existing surtax.

A fairly high degree of evasion of income and profit taxes is admitted in India to-day. But whereas the administration would reckon it to be of the order of Rs. 20–30 crs., Mr. Kaldor would favour a figure more like Rs. 200–300 crs. The truth probably lies nearer the higher figure, and indeed it may even be an understatement, since the figures on which Mr. Kaldor bases his estimate show the highest ratio of income declared to estimated income received in the category of incomes derived from trade, which are notoriously the most difficult to assess.

We have already noted two obvious causes of evasion: (i) the loopholes for expense accounts due to bad drafting of the legislation, and (ii) the incentives set up by the untenably high marginal rates of surtax. In addition, there is strong circumstantial evidence that the Inland Revenue is insufficiently staffed, overworked and underpaid.[1] Mr. Kaldor admits that both the expenditure tax and the tax on accrued incomes will be more difficult to administer than the present income surtax system, and emphasises that the Inland Revenue must be strengthened both in numbers and calibre, with higher pay; but in the short period at least the supply of suitable officers is likely to be highly inelastic. When soberly considered the tasks facing the administration under the new system are little less than staggering. For instance, the establishment of the wealth tax requires the valuation of all property. Even if initially tax-payers' own valuations are accepted, these will clearly have to be checked as quickly as possible; and there is at present no Valuation Department. A slight mistake in a code number or wrong entry in a tax voucher could give rise to endless goose chases. The complexities of running an expenditure tax in Indian conditions, where many wealthy citizens have no official bank accounts and the accounts of even sizeable firms are mainly kept in the proprietor's head, need no emphasis.[2]

On the other side it is unlikely that Indian tax-payers would be able to complete all the statements accurately without a great deal of help from secretaries, accountants and auditors. Indeed, one must ask oneself how the average conscientious tax-payer in the United Kingdom would fare when faced by such an examination paper. In fact, it is part of the plan that personal accounts must be audited, perhaps by Government auditors.

[1] This is supported by the strike threat reported in *The Times*, August 1, 1957. It is interesting to note that Pakistan has recently opened a Finance Academy for finance officers, who will receive special training and qualify for higher pay. The initial response has been excellent.

[2] Much as they would like to, the authorities have never succeeded in bringing the "indigenous" banks out into the open or under control.

In the first instance Mr. Kaldor suggests that this requirement should be confined to the highest brackets (income Rs. 1 lakh, property 10 lakh and business profits 50,000 lakh). Penalties for non-compliance should be drastically increased; but it will not always be easy to establish the taxpayer's guilt, as distinct from his inertia or even innocent muddle.

Finally, is Mr. Kaldor justified in holding that there will be no increased incentives nor uncontrollable opportunities for evasion under the new system? Here the comparison with Sweden, a country with exceptionally high standards both of civic responsibility and of education, can be dangerously misleading.[1] Again, in Sweden the small size of both population and country must greatly facilitate the tracing of errors and omissions. Moreover, if the counter-checking system breaks down there will be a danger of it working in reverse: an omission on one account due to taking a transaction out of the traceable tax voucher system (or even completely out of the chain of money transactions)[2] will lead to an opposite concealment.

Further, I believe Mr. Kaldor has underestimated the immense psychic satisfaction derived from gold and jewellery by *all* classes in India. In cool calculation it may very well not pay to evade any of the taxes (or would not, if the surtax rates had been reduced as recommended). But as things are there will always be a pull towards gold, and that only partly due to its sound reputation as a hedge against inflation. Mr. Kaldor assumes that a flight into gold could not go far, as a large increase in demand impinging on a more or less fixed supply must tend to push up internal gold prices so much as to give rise to expectations of a fall. This again seems too optimistic. Internal gold prices are already above world prices, and a considerable further rise could be tolerated. Gold and jewellery can all too easily be introduced along north India's long land frontier (especially in the creeks of Bengal), or again by dhow and catamaran along her flat southern coasts. Small merchants are well known to be among the most persevering and patient of the human race, and it is unlikely they would be interested in tax vouchers. The prizes of evasion are not likely to be less than under the present system. Above all, a tremendous strain will be put on already overworked revenue officers, so that it is hard to believe that the opportunities for evasion will not be even better than they are now.

Before leaving the Kaldor plan it would be wrong not to draw attention to a number of useful and penetrating suggestions for the improvement of the working of the Inland Revenue Department. These are largely independent of the plan, and it is much to be hoped that they will be put into operation immediately. In contrast to the position in the United Kingdom,

[1] At the same time, until very recently at any rate, the methods of assessing the top incomes in Sweden were admitted to be less than adequate, and may indeed have been partly responsible for the exceptional equality of incomes shown in the statistics.

[2] The amount of barter transactions in industrial England is probably much greater than economists are in the habit of supposing.

the Indian Inland Revenue Department has not been brought into line either with modern ideas of fiscal policy or with the technical and mechanical devices which are now available to secure enforcement.

The most important recommendations on the administrative side are: first, that a Central Valuation Department should be established immediately in the Ministry of Finance; secondly, that a Central Registry of all urban real estate ownership should be set up, later to be extended to rural property; thirdly, that the Reserve Bank should in future be responsible for all transactions in Government Debt; fourthly, that "blank transfer certificates" for stock-exchange securities should be abolished; and finally, that it should be compulsory to declare beneficial ownership of a security. These changes are really necessary; indeed, the fact that they have not been made before this illustrates the handicaps under which the revenue officers are working. More generally it is suggested that a central registry of income-tax returns with photostatic copies should be established, on the lines now familiar in the United Kingdom. This would greatly facilitate the work of the officers in the central Department, and if a few more details could be obtained on the income-tax return than is at present the case, would enable them to analyse the real position of the top taxpayers. The combined effect of these improvements might well reduce the amount of evasion more effectively than more elaborate innovations.

In reading the Kaldor Report one is inevitably reminded of that other blue print for tax reform: the Shoup Report on Japanese Taxation of 1949. Indeed, the parallel is very close, because Professor Vickrey, who was an important member of the Shoup team, stands very near to Kaldor in his approach to tax problems; both are disciples of Henry Simons and Irving Fisher. The immediate reaction to the two Reports has, however, been very different. At the orders of the Occupying Power the Japanese adopted the entire Shoup Plan at once; but basically they had been satisfied with their own system of taxes, and had little desire or need for a change. When the Shoup team revisited the country in the following year they found that the process of abandonment of the innovations in the plan had already started; since then it has become almost complete. It will be interesting to have from Mr. Kaldor a parallel report on the working of his plan in a few years' time.

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OBITUARY

JOHN VON NEUMANN, 1903–57

WHEN John von Neumann died in Washington on February 8th, 1957, at the height of his life, the world lost one of the greatest contemporary scientists. Though primarily a mathematician—and one of absolutely first order—he excelled in many other fields to which he made profoundly significant contributions. He was the first of the great, creative mathematicians who gave prolonged attention to economic and social science. This is an historical fact of importance. The consequences of his interest in economics are only now becoming apparent.

Von Neumann was born on December 29, 1903, in Budapest, the eldest of three sons of a prosperous banker. Already as a small child he showed his unusual gifts; so at the age of twelve he had mastered E. Borel's *Théorie des Fonctions*. Consequently, when he enrolled in the University of Budapest he was so far advanced in mathematics that instead of attending courses there he went to Zürich to study chemistry. But there he came under the influence of Hermann Weyl, whose most illustrious pupil he became. After gaining degrees both in Budapest and Zürich, he became Privatdozent in Berlin and Hamburg, spent some time in Göttingen and was in 1930 called to Princeton University to a chair of mathematical physics. When the Institute for Advanced Study was founded he became professor of mathematics, a position he held for the rest of his life. In 1955 he was made a member of the United States Atomic Energy Commission, to whose work he had already contributed brilliantly for many years in various other capacities. For his public work and his achievements in science he received many high honours and distinctions from all over the world.

Eminence of the kind reached by von Neumann is rare in any one science—it is absolutely exceptional that it should occur in several. Yet this was the case, although in our time few can be at home in their own disciplines. Whatever field he touched was profoundly affected by his thought. First there was pure mathematics, where he obtained new deep results in almost every branch of that sprawling science which can hardly any longer be viewed by a single human. His contributions are notably in the axiomatics of set theory, Hilbert space, operator theory, mathematical logic (where he paved the way for Gödel), group theory, almost periodic functions, measure theory. He proved the ergodic theorem and established a new branch of geometry, continuous geometry without points. With his book on the *Mathematical Foundations of Quantum Mechanics* (1932) this new field of physics was for the first time put on a secure mathematical footing. In this work, as well as in later studies of *Quantum Logic* (1936), he made it abundantly clear that classical mechanics and statistical mechanics are one, but quantum mechanics is different in kind from them, while many have

attributed, and still do, the break in physics to the former. It is impossible to say in which of these domains rests the greatest significance of von Neumann's achievements. Perhaps his development of operator theory and of algebras of operators, which has already influenced mathematics profoundly, will continue to be the most important. His latest interests were in the direction of a theory of non-linear differential equations, a topic to which he gave much thought.

The universality of his mathematical genius did not stop here, because he was also deeply interested in applied mathematics. Indeed, one would have to go back far in the history of mathematics to find someone to equal him in this field. There was a deep, philosophical motivation for his interest in applications: he saw that the greatest inspirations for mathematics have always come from the real world. Therefore close contact with empirically given problems should guide mathematical research. Hence his great concern with physics, astrophysics, meteorology and economics. The first three naturally overshadowed the last, but the fact that he turned his mind so strongly to the social sciences makes him of exceptional importance for economists. His applied work was also strongly influenced by the computational–numerical. It led him to high speed electronic computers, a development he has influenced more than any other man. He is the creator of the logic underlying these new tools and he has accomplished veritable marvels in their ingenious uses. Also they have led him to deep studies about the limitations of numerical computations, about the length of proofs and similar problems. The Monte Carlo method, developed with S. Ulam, is another of his devices that has become widely known and has grown into a discipline of its own. He also published several papers on statistics that are of importance to those who have to deal with trend analysis and the tests arising from it; they deal with the mean square successive difference and the variance. There are, furthermore, papers on the statistical distributions of stars, on shock waves and on aerodynamics. His work on meteorology, in particular, has given a new turn to this science; there a unique combination of theoretical intuition with an exploitation to the limit of electronic computers has produced an entirely new phase in this ancient art.

It is against this background of massive work and unique achievement that von Neumann's work relating to economics must be viewed. Never before has a man with as wide and profound an acquaintance with mathematics and science concerned himself so deeply with our discipline. This alone would appear to be a reason to listen carefully to what he has to say on economics; but fortunately there is the direct, intuitive appeal of his new ideas. These are in two areas: games of strategy and the expanding economy. His first paper on games was published in 1928, and contains the fundamental minimax theorem upon which the whole later edifice rests. It reappears in his paper on the economic equations, first published in

Vienna in 1937 and again in translation in 1945 in *The Review of Economic Studies*. The appearance of this theorem in both cases points to a deeper connection which still remains to be uncovered. The significance and depth of this theorem, one of the most important in modern mathematics, are becoming clear only gradually. In 1944 was published *The Theory of Games and Economic Behavior*, which has since given rise to the publication of many books and several hundred papers by numerous authors. Game theory explains first of all games as such and then uses them as models for economic and social behaviour in view of the strict identity between economic phenomena and suitable games of strategy. In addition, the theory has become a mathematical discipline that has also been used as such in purely mathematical situations. In games of strategy, as distinguished from mere games of chance, the outcome is never dependent on the variables controlled by any one individual alone but only by all variables, some of which are controlled by other individuals, some perhaps by chance. The interests of the individuals are sometimes opposed to each other, sometimes they are parallel. There is here, therefore, given no ordinary maximum problem at all but a peculiar mixture of such—a conceptual situation entirely different from that studied by present-day economics. It cannot be treated by conventional methods, such as analysis and differential equations; it requires recognition of the fundamental, combinatorial character of economic problems. Hence the use of mathematical logic, set theory, group theory and the like, at least until that great day when a new calculus, appropriate to these problems, will have been discovered. The emergence of combinatorics in this connection was viewed by von Neumann as of profound significance, heralding a turning away from the commonly used techniques and conceptual methods in the social sciences. The mechanical analogy used in economics since its earliest beginnings is abandoned and *a fortiori* the conceptual and mathematical devices that go with it. Instead the notion of an optimal strategy is introduced and a clarification of the idea of " rational behaviour " is obtained for all conditions of complexity of the interaction of different individuals. This leads to thorough consideration of the co-operation among players and to a new analysis of the non-additivity of value. Incidental with the main theme a method for making utility numerical up to a linear transformation is devised, based on the fundamental fact that all human behaviour is directed towards the future and hence beset with uncertainty. On the other hand, the notion of " marginal " utility is abandoned in its simple current form.

Should game theory prevail, the break with conventional economics would go much deeper than the one that occurred in the 1870s with the arrival of the marginalistic schools. The latter were a fairly continuous development within the framework of the concepts that had originated in the eighteenth century. This is similar to the above mentioned situation produced in physics by quantum mechanics. The comparison should, of course, not

be taken literally: it was von Neumann's firm conviction that the state of economic theory now is comparable to that of physics before Newton.

The creation of the theory of games must be viewed as one of the greatest of von Neumann's achievements, and it has been heralded as such by many of his mathematical contemporaries. The penetration of the theory into fields such as operations research and military strategy has been swift; its exploration and application by economists is progressing at a faster rate now that the different orientation it requires is no longer so difficult to achieve, at least for the younger members of the profession. Another factor is that parts of the theory are closely related to linear programming, as is true of his model of an expanding economy. This latter paper marks a turning point of another kind. It is shown that a uniformly expanding system is possible (under certain restrictive assumptions) and that the rates of expansion and of interest have to equal each other. One of the characteristics of the model of signal importance to the economist is that it deals with inequalities rather than equations. Hence there is no " counting of equations " as a means of determining the existence of an equilibrium. Many subsequent developments in economics, such as dynamic input–output models, have since been shown to be but special cases of von Neumann's model which also has been significantly generalised by other writers in the last few years. Von Neumann himself took vivid interest in this work even in the last months of his mortal illness.

Von Neumann was so deeply interested in game theory because it confirmed his basic belief that inspirations for mathematics come from the empirical side. Mathematicians had so far neglected the social world (if we exclude their seventeenth–eighteenth-century interest in gambling which led to probability theory). Among mathematical economists there has until now been no one of the stature of von Neumann, and it may be long before a similar figure appears again.

In the last years of his life von Neumann was greatly concerned with still another area also of social significance—always leaving out of account his work for the defence of the United States, which took a great toll of his energies. This was the theory of automata. With his work on computing machines he had already made unique contributions in this new field. In a monograph on *Probabilistic Logics* (1952) he resolved the basic problem of the construction of a reliable organism from unreliable components, obviously a fundamental issue especially for computing devices. In other work he proved the possibility of describing—and hence constructing—a machine which, when confronted with the parts from which it is made, will reproduce itself, transferring this ability of reproduction also to the new construct. These and similar problems caused von Neumann to be deeply involved in neurological studies, in which field he has done much to mathematise our knowledge. His voluminous writings on automata, a topic on which he repeatedly lectured in the last few years, are incomplete, although

parts may be published. The loss for the scientific world is very great; it is known that he had developed entirely new thoughts for describing organisms and machines, some relating to the foundations of logic. He also was full of further ideas regarding computing machines; in particular, he was convinced that certain chemical reactions could be used to increase their speed and capacity.

Von Neumann exercised an unusually large influence upon the thought of other men in his personal relations. Few people can have been sought more eagerly, and he gave freely of his time. His stupendous knowledge, the immediate response, the unparalleled intuition held visitors in awe. He would often solve their problems before they had finished stating them. His mind was so unique that some people have asked themselves—they too eminent scientists—whether he did not represent a new stage in human mental development. It is impossible to convey a good picture without going into a detail for which this is not the proper place. As a mathematician, von Neumann was also gifted with an ability to calculate in his head so great that he would have been noteworthy had he never done anything else. His memory never failed him; not only did he have at instant command the fabulous store of his scientific knowledge, but also the fruits of his general reading were readily available, whether procedural details of the trial of Joan of Arc, the involved genealogy of the Byzantine emperors or the battle descriptions of Thucydides. Poetry in many languages was familiar to him; even in the last days of his long illness would he sometimes quote at length from Latin authors. The flexibility of his mind made him a most entertaining companion: the powerful associations in his scientific thinking would then give way to innumerable and equally famous puns and jokes. No one who knew him personally could escape his charm and help but admire him. As a friend his loyalty was unsurpassed. Wherever he appeared it was an event.

Looking upon the whole of his work, one marvels that so much could be accomplished in so short a life. To state that we witnessed a combination of purest genius with a seemingly unbounded vitality and energy is a feeble way to give expression of the singularity of this man.

OSKAR MORGENSTERN

Princeton University.

CURRENT TOPICS

We offer our best congratulations to Professor G. C. Allen on the conferment of a C.B.E. in the New Year Honours.

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VOL. VI, No. 3, NOVEMBER 1957. *The Sampling of Road Traffic:* J. C. TANNER. *Normality in Quality Control Charts:* P. G. MOORE. *Differences between Experienced Interviewers:* A. BARR. *"Three-Group" Regression Analysis: II: Multiple Regression Analysis:* W. M. GIBSON and G. H. JOWETT. *A Simple Sequential Procedure to Test whether Average Conditions Achieve a Certain Standard:* R. C. TOMLINSON. *An Optical Periodograph for Use in the Analysis of Continuous Measurements:* K. W. KEMP. *Confidence Limits for the Range of a Search Radar:* C. STEVENS.

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Which?

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No. 3, 1957. *The Avoidance of Excessive Centralisation in Planning and the Reduction of the Number of Plan Indicators:* N. POPOV. *Scope for Increasing Our Meat Output:* S. KOLEV. *The Influence of Spoilage on Industrial Production and Ways of Fighting It:* D. IORDANOV. *The Analysis and Elimination of the Influence of Changes in the Composition of the Labour Force and of Output Upon Labour. Productivity Indices:* A. AVRAMOV. *On the Organisation of Our Material-Technical Supply:* A. KONSTANTINOV. *The Analysis of the Use of Working Capital in an Industrial Enterprise:* I. PEEV. *The Economic Situation of Indonesia:* K. ANTOV.

No. 4, 1957. *Economic Co-operation between the U.S.S.R. and the Peoples' Democracies:* V. NIKOLOVA. *Improve Financial Discipline:* D. STATELOV. *The Use of Average Profits as an Indicator in Determining the Agricultural Plan:* D. VLADOV. *Some Shortcomings in the Organisation of Material-Technical Supply and their Elimination:* N. NIKOLOV. *On Improving the Accountancy of Our Material-Technical Supply:* M. DIMITROV. *The Analysis of Accounting Data in Industrial Enterprises:* E. ILIEV. *Analysis of the Fulfilment of the Production Programme of an Industrial Enterprise:* N. KOLEV.

No. 5, 1957. *The Universal Historical Successes of Socialist Construction in the U.S.S.R. and Their Significance:* TS. DRAGOICHEVA. *Further Specialisation and Co-operation—a Major Reserve for Developing Our Engineering and Metal-working Industry:* T. DENEV. *Some Questions of Our Water Supply:* I. GADZHALSKI. *The Correct and Full Utilisation of Labour Resources on a Co-operative Farm:* D. PENKOV. *On the Problem of Centralising or Decentralising the Supply System:* G. DIMITROV.

Finansi i Kredit (*Bulgarian text*)

No. 7, 1957. *A Great Anniversary of Liberty. The Making of Building Estimates and the Repayment of Funds Spent on Temporary Construction:* Ts. KOZOVSKI and P. PAVLOV. *Savings in the Rumanian People's Republic:* I. PALIISKY. *Compulsory Travel Insurance:* R. DASKALOV. *For Strengthening and Extending Intra-factory Accounting:* M. DEVEDZHIEV. *The Underwriting of Loans Advanced by the Bulgarian National Bank:* D. KASABOV. *Control over Investment Credits Accorded to Co-operatives:* V. MAZNIKOV.

No. 8, 1957. *For Decisive Improvement in the Work of Local Financial Agencies. On the Quantity of Money Needed for Circulation in a Socialist Economy:* G. KOZLOV. *The Progress of Our Stockbreeding and Long-term Credits for Collective Farms:* D. SAPUNDZHIEV. *For the Liquidation of Excess Stocks in Retail Enterprises:* V. PAVLOV. *The Acceleration of the Turn-over of Working Capital—a Source of Better Profits in an Enterprise:* D. CHRISTOV.

No. 9, 1957. *The Fortieth Anniversary of the Great October Socialist Revolution:* K. LAZAROV. *Soviet Financial Experience and the Elaboration of the Bulgarian Financial System:* G. BOKOV. *Soviet Finance and the Development of the Economy of the U.S.S.R.:* N. DATSKOV. *Forty Years of the Soviet Credit System:* D. BADZHAROV. *Finance and Social–Cultural Construction in the Forty Years of Soviet Power:* V. TODOROV. *The Progress of Small Savings in the Soviet Union:* I. PALIISKI. *Insurance in the Soviet Union:* Z. MITOVSKI.

Ikonomicheska Misl (*Bulgarian text, French and Russian summaries*)

No. 3, 1957 *The Sixty-fifth Anniversary of the Birth of G. Dimitrov. The Triumph of Leninist Principles in the Management of Industry and Construction. Commodity Production and the Action of the Law of Value under Socialism:* K. DOBREV. *Changes in the Pattern of Bulgarian Imports and Exports as a Result of Socialist Industrialisation:* ZH. BOZHILOV. *Investment Problems on Co-operative Farms:* K. ZANEV. *On the Location of the Second Fertiliser Plant:* D. IVANOV. *The 1907 Peasant Revolt and the Development of Agrarian Relations in Rumania:* P. NEICHEV. *Changes in Planning in the German Democratic Republic:* J. HAHN and G. MANZ. *The Common Market:* K. STAMEV.

No. 4, 1957. *Thirteen Years of Popular Democratic Power. Vasil Kolarov—an Economics Scholar:* J. NATHAN. *Our Price Policy:* K. LAZAROV. *Geographic and Economic Characteristics of Bulgarian Shipping and their Use:* N. DOINOV. *On the Economic Nature of Distribution Costs:* A. ZAKHARIEV. *The Development of Commercial Relations between Bulgaria and Turkey:* JA. ALEKOV. *Production Cost and Self-finance on Co-operative Farms:* P. BAILOV.

Ekonomist (*Croat text*)

No. 4, 1956. *The Reproduction Process Analysis of Marx as a Theoretical Basis for the Yugoslav Planning Methodology:* J. SIROTKOVIĆ. *Structural Trends in Jugoslav Foreign Trade:* V. PERTOT. *The Reduced Measuring Standard in the Theory of Value:* A. BAJT. *The Situation and Prospects of Imports and Exports of Agricultural Produce:* D. DAVIDOVIĆ. *The Credit Potential of Commercial Banks:* D. DIMITRIJEVIĆ.

Statiszţikai Szemle (*Hungarian text, English and Russian summaries*)

JULY 1957. *Selections from the Works of Elek Fényes. The Life and Work of Elek Fényes:* I. MÉSZÁROS. *Celebrations on the 150th Anniversary of the Birth of Elek Fényes. The Rationality of Domestic Metallurgy:* J. FÁY. *The Concept of Labour Productivity and Its Statistical Measurement in Industry:* L. OLLÉ. *Some Theoretical Remarks on National Income Methodology:* GY. HAJPÁL. *Industrial Accidents in Hungary, 1951–56:* Z. MARTON. *Once Again on Foreign Trade in the Balance of the National Income:* S. FERGE. *The Fifth Plenary Session of the Conference of European Statisticians:* J. RÉDEI. *The National Income of Greece, 1953–55:* GY. VUKOVICH.

AUGUST–SEPTEMBER 1957. *The Development of the Co-operative Farm Movement and Co-operative Farming in Hungary:* I. HAJDU. *The New Tasks of Industrial Statistics:* O. LUKDÁS. *The Money Circulation Balance of the Population and the Calculation of Purchasing Power:* A. CSERNOK. *Examination of Short-distance Freight by Rail and by Road:* GY. HEGEDÜS, K. JENEI and J. KEPECS.

Közgazdasági Szemle (*Hungarian text, English and Russian summaries*)

No. 10, 1957. *Recommendations of the Economic Expert Committee:* I. VARGA. *Trends in Purchasing Power and Income Formation:* F. VÁGI. *Conditions of Large-scale Production and Productivity in Farm Co-operatives:* I. BEREND and OTHERS. *Some Economic Aspects of*

Hungarian Bauxite and Aluminium Production: G. MARKOS, V. MIHALECZKY and S. BALÁSZY. *Current Planning Problems in the German Democratic Republic:* K. HAHN and M. ENGERT. *Concrete Economy: A New Branch of Marxist Political Economy:* I. HARSÁNYI. *Comparative Treatises on Labour Productivity in Foreign Literature:* Z. ROMÁN. *Economic Aspects of Flood and Inland Water Control in Hungary:* A. FEKETE.

No. 11, 1957. *Successes of the Soviet Union in Competing with the U.S.A.:* F. MOLNÁR. *The Victory of Socialist Construction in the Soviet Union by the Policy of Lenin:* E. MOLNÁR. *On the Use of the Law of Value in the Socialist Economy:* L. GATOVSKY. *Development of Investments over Forty Years in the Soviet Union:* S. AUSCH. *Trends in the Development of Soviet Industry in the Last Forty Years:* E. REDO. *New Accomplishments and Perspectives in Soviet Farming on the Road to Plenty:* E. CSIZMADIA. *Discussion in the Soviet Union on the Use of the Law of Value and the Categories of Value:* T. NAGY.

Probleme Economice (*Rumanian text, French and Russian summaries*)

No. 5, 1957. *Work for Society and the Overall Processes of a Socialist Economy:* C. IONEȚE. *The Cost of Living and the Real Wage Indexes:* M. BIJI and V. TREBICI. *Some Aspects of the Problem of Excess Stocks and Surpluses:* M. SIBIANU and V. CHIRIA. *Agriculture Collectivisation in the Timisoara Region:* N. BELLI. *Consumer Co-operatives and the Development of Commercial Exchanges between Town and Country:* CH. FETEANU. *Some Questions Relating to the Socialist Transformation of Capitalist Industry in China by Peaceful Means:* I. BURȘTEIN. *On the Agrarian Crisis in Rumania in the Nineteenth Century:* N. MARCOU. *On the Creation of the Common Market in Western Europe. Problems of Determining the Economic Efficiency of Investments in Socialist Industry as Discussed by Certain Socialist Economists.*

No. 6, 1957. *Collaboration between Socialist Countries and the Development of the Chemicals Industry:* M. FLORESCU. *Some Problems Relating to the System of Industrial Wages:* S. ZEIGHER. *On the Economic Efficiency of Investments in Industry:* A. GLÜCK. *Proper Calculation of the Profitability and Efficiency of Socialist Foreign Trade:* T. PAVEL. *The Degree of the Socialisation of Production in Simple Farm Associations:* D. DIMITRIU. *The Agrarian Programme of the 1848 Revolution in Moldavia and Wallachia:* V. IONESCU. *The Principal Successes of the Three-year Reconstruction and Development Plan of the People's Democratic Republic of Korea:* NAM IN HO. *Some Apologiæ for a "People's Capitalism":* L. STROJA. *Wholesale Prices and the Transposition of the Turnover Tax:* C. IONEȚE. *On Calculating Costs of Production on Collective Farms:* S. DOVARI. *Democratic Centralism and the Planned Direction of the Economy:* R. MOLDOVAN.

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No. 8, 1957. *A Statistical Reflection of the Economic Achievements of the Rumanian People's Republic. The Economy of Russia on the Eve of the Great October Socialist Revolution:* M. IONESCA. *The Creation of the Material Basis for Socialism in the U.S.S.R.:* A. NOTKIN. *On the Domination of Industry by Monopoly Capital in Bourgeois-Agrarian Romania:* I. MUNTEANU, S. DUMITRESCO and L. HERȘCOVICI. *Local Authority Finance:* I. URSACHE. *Components of Labour Productivity Increments in the I.C. Frimu Factory, Sinaia:* V. TREBICI. *Co-operation in Stock-breeding:* D. DIMITRIU. *The Restoration and Development of the Economy of the Democratic Republic of Viet-Nam:* F. TUDOR. *Facts and Beliefs on the Wage Problem in Great Britain:* D. MARIN. *The Influence of Petit-bourgeois Socialism on Rumanian Writing During the Nineteenth Century:* G. MLADENATZ. *On Labour Productivity in Industry:* D. GRINDEA.

No. 9, 1957. *The Victory of the Collective Farm System in the U.S.S.R.:* M. KRAEV. *The New Tasks of Soviet Agriculture:* S. NICA and G. VRȚELI. *The People's Democracy—the Chief Instrument for the Shaping of the Rumanian Socialist Economy:* M. DULEA. *Ways to Cut Material Costs in the Chemical Industry:* E. OPRIȘAN. *A Contribution to the Just Solution of the Correlation of the Wage Fund to Total Output:* R. CRESIN. *Labour Productivity in Stock-breeding:*

C. ORDACE. *Critical Observations on a Capitalist Input–Output Matrix:* T. SCHATTELES. *The Alienation of Labour under Capitalism:* P. DAN. *On Costs and Efficiency in Collective Farms:* V. PASCOVSCHI and M. TĂPĂLOAGĂ. *The Improvement of Economic Planning in the German Democratic Republic:* G. MANZ.

No. 10, 1957. *The Laws and Fundamentals of the Great October Socialist Revolution:* V. VARGA. *Regular Economic Development—the Decisive Factor in the Victory of Socialism:* M. MANESCU. *Economic Collaboration and Mutual Aid between Countries of the Socialist System:* A. LAVARIȘEV. *Main Trends in the Socialist Industrialisation of the U.S.S.R. and the Peoples' Democracies:* M. IAROVICI and B. CONSTANTIN. *Some Aspects of Agricultural Collectivisation in the U.S.S.R. and the Peoples' Democracies:* A. ONULESCU and D. DUMITRIU. *The Elimination of Economic Inequality between the Peoples of the U.S.S.R.—a Great Victory of the Socialist October Revolution:* P. ALAMPIEV. *Soviet Planning after the Reorganisation of Industrial and Building Management:* G. PEROV. *Economic Assistance Given by the U.S.S.R. for the Building of Socialism in Our Country:* G. MARIN. *The Present State of Exchanges between Town and Country:* C. DANCIU and O. SNAK. *Some Aspects of the Influence of the October Revolution on Bourgeois Economics:* M. DIMA. *Commercial Relations between Developed and Under-developed Capitalist Countries:* A. ZAMFIR.

NEW BOOKS

British

The Accountability of Public Corporations. A Course of Studies Paper. Henley on Thames: The Administrative Staff College, 1957. 9″. Pp. 96. 8*s.* 6*d.*

[This is a revised edition of a paper first published in 1955. It is designed as a work of reference and provides a full factual statement of the powers of control over the several public corporations.]

ADLER (S.). The Chinese Economy. London: Routledge & Kegan Paul, 1957. 9″. Pp. xi + 276. 25*s.*

[To be reviewed.]

The Availability of Raw Cotton in Western Europe. Manchester: International Federation of Cotton and Allied Textile Industries (567 Royal Exchange, Manchester 2), 1957. 9½″. Pp. 23.

[This describes the import restrictions and currency controls affecting the import of raw cotton in each of the chief countries in Western Europe. An account is also given of the price-support policies, home- and export-price differentials, and other interferences with market freedom practised by the governments of the principal cotton-exporting countries. The report looks forward to increasing liberalisation of trade in cotton as one of the results of closer European unification.]

BAUER (P. T.) and YAMEY (B. S.) The Economics of Under-developed Countries. Cambridge Economic Handbooks. London: Nisbet and the Cambridge University Press, 1957. 7½″. Pp. xiii + 271. 10*s.* 6*d.*

[To be reviewed.]

BEIT (SIR A.) and LOCKHART (J. G.). The Will and the Way, being an account of Alfred Beit and the Trust which he founded. London: Longmans, 1957. 10″. Pp. xii + 106. 42*s.*

[The first two chapters, by Sir Alfred Beit, are an account of the life of his uncle, Alfred Beit, the friend and collaborator of Rhodes and the founder of the Beit Trust. The remainder of the text, by J. G. Lockhart, describes the activities of the Trust since it was first established in 1906. In the early days the greater part of the Trust's money was used to improve the transport system of the Rhodesias, especially to build bridges, but more recently education and (to a less extent) social welfare have been the main beneficiaries. Since 1937 an increasing proportion of the educational expenditure has been for the education of Africans. A statistical appendix to the book, prepared by the Economist Intelligence Unit, reviews in pictorial form the work of the Beit Trust and the development of the Federation.]

BELLAMY (J. M.). The British Markets for Flour and Wheatfeed. An economic analysis. Hull: Department of Economics, University of Hull, 1957. 13″. Pp. 42. 7*s.* 6*d.*

[This inquiry, carried out under the Conditional Aid Scheme, is concerned with the period between August 1953 and September 1956. The author describes the factors affecting supply, demand, and prices of wheat, flour and wheatfeed, and the degree of competition in the markets for these products in Great Britain. Flour consumption per head has declined compared with before the War, and despite a fall in imports, the British milling industry taken as a whole has been operating below capacity. The market for flour has also been influenced during the period by structural developments in the baking industry, notably the expansion of Allied Bakeries and the extension of the large millers' interests in the industry.]

BONNÉ (A.). Studies in Economic Development. With special reference to conditions in the underdeveloped areas of Western Asia and India. In the International Library of Sociology and Social Reconstruction. London: Routledge & Kegan Paul, 1957. 9″. Pp. ix + 294. 32*s.*

[To be reviewed.]

BOYD (A.). An Atlas of World Affairs. London: Methuen, 1957. 8″. Pp. 159. 15*s.*

[This is divided into seventy two-page chapters, each focusing on a particular region or on a particular aspect of world affairs, *e.g.*, NATO, European free trade, Suez. Each chapter contains a map and a page of text describing the historical background and present state of the issues illustrated by the map.]

CLEGG (H. A.) and ADAMS (R.). The Employers' Challenge. A study of the national shipbuilding and engineering disputes of 1957. Oxford: Basil Blackwell, 1957. 9″. Pp. 179. 21*s.*

[To be reviewed.]

COLE (G. D. H.). Capitalism in the Modern World. Fabian Tract 310. London: The Fabian Society, 1957. 8½″. Pp. 33. 2*s.* 6*d.*

[Professor Cole considers in this tract how socialist policy should be framed in the light of the relatively successful performance of capitalism over the last hundred years and the falsification of Marxian prophecies both in capitalist countries and in Russia. He looks forward to a gradual but steady increase in the public sector of the economy, with the dwindling private sector in the meanwhile being allowed the conditions for efficient operation.]

DENMAN (D. R.). Estate Capital. The Contribution of Landownership to Agricultural Finance. London: Allen & Unwin, 1957. 9″. Pp. 218. 22*s.* 6*d.*

[To be reviewed.]

DUE (J. F.). Sales Taxation. London: Routledge & Kegan Paul, 1957. 9″. Pp. ix + 396. 40*s.*

[A very exhaustive (and at times exhausting) treatment of sales taxes in North America and various Western European countries. The book is available as a source of information on the way these taxes operate in different countries, and has the further merit of being very up to date. The chapter on the British Purchase Tax, for instance, is a most useful summary of the history and working of the tax. The theoretical chapters are adequate but hardly inspiring. The flatness of the style and the general air of mass production make it difficult to recommend, other than as a cookbook—but a very good one of its kind and one which took an immense amount of effort to prepare.]

FFORDE (J. S.). An International Trade in Managerial Skills. An inquiry into the provision of certain British managerial and technical services for the operation of industrial enterprise in underdeveloped countries. Oxford: Basil Blackwell, 1957. 9″. Pp. 153. 18*s.* 6*d.*

[To be reviewed.]

FIRTH (R.) (Ed.). Man and Culture. An evaluation of the work of Bronislaw Malinowski. London: Routledge & Kegan Paul, 1957. 9″. Pp. 292. 32*s.*

[This volume consists of a collection of specially contributed essays by former students and colleagues of Malinowski evaluating different aspects of his work in anthropology.]

FORD (P.) and FORD (G.). A Breviate of Parliamentary Papers, 1900–1916. The foundation of the welfare state. Oxford: Basil Blackwell, 1957. 10″. Pp. xlix + 470. 92*s.* 6*d.*

[To be reviewed.]

HESS (A.). Some British Industries. Their expansion and achievements, 1936–1956. London: Information in Industry (17 Clifford Street, W.1), 1957. 10½″. Pp. 317. 42*s.*

[The Whitehead Industrial Trust at the present time sponsors shares in upwards of a hundred and twenty companies in a wide range of industries. This book provides brief popular illustrated histories of each of these companies.]

HOSKINS (W. G.). The Midland Peasant. The economic and social history of a Leicestershire village. London: Macmillan, 1957. 9″. Pp. xiii + 322. 30*s.*

[To be reviewed.]

HUBBACK (J.). Wives who went to College. London: Heinemann, 1957. 7½″. Pp. 164. 12*s.* 6*d.*

[To be reviewed.]

Hudson's Bay Copy Book of Letters Commissions Instructions Outward, 1688–1696. Publications of the Hudson's Bay Record Society, XX. Edited by E. E. Rich. London: Hudson's Bay Record Society, 1957. 10″. Pp. lxiii + 357.

[The letters outward from London, here reprinted, form one of the main sources from which the history of the Company in this particular period can be learned, on account of the paucity of surviving documents coming from the Bay. The introduction by Mr. K. G. Davies traces the history of the Company and its financial position during the period.]

INTERNATIONAL ECONOMIC PAPERS, No. 7. Translations prepared for the International Economic Association. London: Macmillan; New York: The Macmillan Company, 1957. 10″. Pp. 184. 15*s.*

[To be reviewed.]

JEWKES (J.), SAWERS (D.) and STILLERMAN (R.). The Sources of Invention. London: Macmillan, 1958. 9″. Pp. xii + 428. 31*s.* 6*d.*

[To be reviewed.]

JONES (L.). Shipbuilding in Britain, mainly between the two world wars. Cardiff: University of Wales Press, 1957. 9″. Pp. 244. 30*s.*

[To be reviewed.]

KELSALL (R. K.). Report on an Inquiry into Applications for Admission to Universities, commissioned by the committee of Vice-Chancellors and Principals of the Universities of the United Kingdom. London: Association of Universities of the British Commonwealth (36 Gordon Square, W.C.1), 1957. 12″. Pp. vi + 32, and 27 tables.

[This is a highly elaborate collection of statistics based on material supplied by universities. It contains information about the number of students, their areas of origin, their educational and social backgrounds, their means of support, their proposed careers, etc. Separate data are given for Oxford, Cambridge, London, Scottish Universities, the University of Wales, Belfast and the other universities taken as a group. Some data are also given on unsuccessful applicants for admission. The text summarises the findings and briefly considers their interpretation. Some of the findings are as would be expected, others less so. Among the less expected are some marked differences between Oxford and Cambridge: thus while in both these universities the proportion of students admitted who had been educated at secondary grammar schools maintained by local education authorities was much lower than for all universities taken together (60·5%), the proportion for Oxford (39·0%) was substantially higher than that for Cambridge (26·6%).]

KNOX (F.). The Co-operative Movement and Monopoly in Britain. Co-operative College Papers, No. 4. Loughborough: Education Department, Co-operative Union, 1957. 9″. Pp. 72. 1*s.*

[This carefully documented and argued essay is an inquiry into the extent to which the Co-operative Movement in Britain serves and could serve to protect the consumer against the ill-effects of monopoly. The author is concerned with the competition or potential competition offered by the C.W.S. in otherwise monopolistic industries, rather than with any pressure that the retail societies

as buyers might be able to exercise on producers. On the basis of a study of movements in prices, sales and profit margins, he concludes that the Co-operative Movement has afforded a substantial degree of price protection to the consumer over quite a number of commodities. In the case of other commodities, the full potentialities of the Movement have in his view not been fully exploited. A large part of the difficulty is to secure sufficient sales to obtain the economies of large-scale production. Mr. Knox suggests that much could be done to enlarge sales of C.W.S. products by more extensive advertising, which would for the most part be done relatively cheaply at the point of sale.]

LONG (J.). Modern Russia. An Introduction. London: Duckworth, 1957. 7¼". Pp. 180. 10*s*. 6*d*.

[Although parts of this booklet retain an attachment to the shibboleths of the cold war, it is on the whole a successful attempt, in a popular vein, to give an objective summary of the facts about the U.S.S.R. and its recent development. In this respect the economic chapter (Chapter IV) though slight is particularly successful, and gives a lucid summary of the main developments, with some useful graphs and tables to illustrate the growth of the past twelve years and comparative growth-rates and production-levels in the U.S.S.R. and the United States. This is a balanced statement that eschews " the complacent view," still prevalent, " that, considerable though her military power may be, her economic capabilities are hardly worth comparing with those of the United States and other members of the Atlantic alliance." Weakest is the short concluding chapter, which is apparently too cautious of stating an opinion to say anything worth while. There is a reasonably good bibliography.]

MACRAE (N.). The London Capital Market. Its structure, strains and management. Second edition. London: Staples, 1957. 8½". Pp. 285. 25*s*.

[The first edition of this book was reviewed in the ECONOMIC JOURNAL of September 1955 by H. C. Edey. A short new introduction on developments since 1954 has been added to this second edition, which is otherwise unchanged.]

MARTIN (A.). Restrictive Trade Practices and Monopolies. London: Routledge & Kegan Paul, 1957. 9". Pp. xii + 264. 30*s*.

[To be reviewed.]

MARTIN (J. P.). Social Aspects of Prescribing. London: Heinemann, 1957. 9". Pp. xii + 180. 21*s*.

[Reviewed in this issue.]

THE NUFFIELD FOUNDATION. Report for the year ended 31 March 1957. London: The Nuffield Foundation, 1957. 8½". Pp. 168.

[This provides the usual full account of the work supported by the Foundation during the past year.]

PENDLE (G.). Uruguay. Second Edition. London: Oxford University Press for the Royal Institute of International Affairs, 1957. 8½". Pp. 107. 15*s*.

[This is a substantially rewritten edition of a book first published in 1952. It contains an interesting brief survey of the country's geography, history, political structure and economic condition.]

POUNDS (N. J. G.) and PARKER (W. N.). Coal and Steel in Western Europe. The influence of resources and techniques on production. London: Faber & Faber, 1957. 9". Pp. 381. 45*s*.

[To be reviewed.]

ROBERTSON (SIR DENNIS). Lectures on Economic Principles, Volume I. London: Staples, 1957. 8". Pp. 172. 16*s*.

[To be reviewed.]

SAYERS (R. S.). Lloyds Bank in the History of English Banking. London: Oxford University Press, 1957. 11". Pp. xii + 381. 35*s*.

[To be reviewed.]

SELF (P.). Cities in Flood. The problems of urban growth. London: Faber & Faber, 1957. 9". Pp. 189. 21*s*.

[To be reviewed.]

SEN (S. R.). The Economics of Sir James Steuart. London: Bell for the London School of Economics, 1957. 9″. Pp. 207. 25*s*.

[Reviewed in this issue.]

Statistical Sources for Market Research. London: The Market Research Society (73 Cheapside, E.C.2) in association with the Oakwood Press, 1957. 8½″. Pp. 32. 11*s*.

[This is designed to serve as a guide to the various government, trade-association and business publications which market researchers may need to use for statistical information. The sources and their contents are classified and described under the following headings: population and vital statistics; labour and employment; raw materials; industry; building, housing and dwellings; transport and communications; retail trade and distribution; national income and expenditure; local government; imports and exports; advertising and readership. This compilation may well be found useful as a brief survey by economists and others as well as by market researchers. The price, however, seems excessive.]

STONIER (A. W.) and HAGUE (D. C.). A Textbook of Economic Theory. Second edition. London: Longmans, 1957. 9″. Pp. 513. 25*s*.

[The first edition of this now well-known text-book was reviewed by Professor E. A. G. Robinson in the ECONOMIC JOURNAL of December 1953. Alterations in the present re-issue are confined to the rewriting of one section and the correction of minor errors.]

The Threat to Education. The case against block grants. London: Councils and Education Press for the Association of Education Committees, 1957. 8½″. Pp. 30. 2*s*. 6*d*.

[This statement of the case against the Government's proposed substitution of Block Grants to local authorities in place of Percentage Grants has been prepared at the request of the Association of Education Committees. Of the many arguments brought forward by the authors, the chief are first that the alleged increase in local authorities' independence in the educational sphere will be illusory, since the Ministry of Education does not propose to relinquish any of its powers, and secondly, that the proposed change is not really based on any new or coherent ideas about education or the relation between central and local government, but is simply a device for cutting expenditure. The authors quote a speech of Lord Hailsham in which he said that education should not "be subject to the pressures of a false public parsimony," and they argue that the proposed measures amount to just such a false parsimony.]

TURNER (H. A.). Wage Policy Abroad: and conclusions for Britain. Fabian Research Series, No. 189. London: The Fabian Society, 1957. 8½″. Pp. 36. 3*s*.

[The author first discusses the objectives that have lain behind proposals for some sort of centralised wage policy. Avoidance of wage–price inflation has been the chief one, of course, but not the only one; the attainment of just or economically desirable differentials has also entered in. He then describes experience with wage policy during and since the War in the United States, Holland, Scandinavia, Australasia, France, Italy, the U.S.S.R. and Yugoslavia. Comparison of the course of events in these countries does not suggest that centralised wage policy has been effective in slowing down the rate of increase of money wage-rates. It appears that the only thing that is effective in that respect is an overall wage-freeze, and even that carries with it a danger of accelerated wage increases afterwards. The main inference drawn by Mr. Turner is that in the circumstances of today there seems to be a certain minimum rate of increase of money wages which is largely independent of institutions or of moderate differences in unemployment or of the behaviour of the price-level. His chief recommendation for policy is the not very encouraging one that the inevitability of wage increases of, say, 4 or 5% a year should be explicitly recognised and should be formalised in long-term contracts. Reliance should then be placed on growth in productivity through higher investment or other means to prevent undue increases in prices from resulting. If such contracts were made, he argues, employers could at least plan ahead on a firm basis, and trade unions might consent as part of the contract to co-operate in securing more efficient use of labour.]

WALKER (G.). Economic Planning by Programme and Control in Great Britain, 1945–50. London: Heinemann, 1957. 9″. Pp. 175. 18*s*.

[To be reviewed.]

WILLIAMS (GERTRUDE). Recruitment to Skilled Trade. In the International Library of Sociology and Social Reconstruction. London: Routledge & Kegan Paul, 1957. 9″. Pp. 216. 23*s*.

[To be reviewed.]

WORTLEY (B. A.) (Ed.). The United Nations. The first ten years. Manchester: Manchester University Press, 1957. 9″. Pp. viii + 206. 25*s*.

[This consists of a series of lectures delivered in 1956 in Manchester to mark the first decade of the United Nations. Most of the lecturers were members of the staff of Manchester University. They included Professor W. A. Lewis on the Economic and Social Council, Dr. Martin on GATT and the I.M.F., and Dr. Mars on the International Bank, the International Finance Corporation, and SUNFED.]

Australian

COPLAND (D. B.) and BARBACK (R. H.) (Eds.). The Conflict of Expansion and Stability. Documents relating to Australian economic policy, 1945–1952. Melbourne: Cheshire (London: Angus & Robertson), 1957. 9″. Pp. xvii + 795. 67*s*. 6*d*.

[To be reviewed.]

Canadian

CORBETT (D. C.). Canada's Immigration Policy. A critique. Toronto: Toronto University Press for the Canadian Institute of International Affairs (London: Oxford University Press), 1957. 9″. Pp. xii + 215. 32*s*.

[The author describes the present policy and the way in which it is administered. He discusses the effect of different types of immigration on Canada in the past and the effects on the immigrants' countries of origin. While he does not believe that migration can do anything fundamental to solve the problems of overpopulated countries, he favours a generous admission policy for Canada in its own interests as well as in the interests of the rest of the world.]

RITCHIE (R. S.). NATO: The Economics of an alliance. Contemporary Affairs, No. 25. Toronto: The Ryerson Press for the Canadian Institute of International Affairs (London: Bailey & Swinfen), 1957. 8″. Pp. 147. 24*s*.

[The author is a Canadian business-man. He discusses some of the relations between the changing political and military purposes of NATO, on the one hand, and its economic basis on the other.]

Indian

DATTA (A.). Essays on Economic Development. Calcutta: Bookland Private Ltd., 1957. 8½″. Pp. 148. *Rs* 5/–.

[This is a collection of essays previously published in Indian journals. The theme is economic growth, and the subjects include innovations, capital formation, population growth, co-operative farming and industrialisation.]

Financial Trends in the Paper Industry. Bombay: The Association of Indian Trade and Industry (21 Hamam Street, Fort, Bombay), 1957. 9½″. Pp. 60.

[This is one of a series on Indian industrial finance to be published by the Association. It describes the finances from 1937 to 1953 of twenty-nine paper companies, with abundant statistical illustration. The series will be useful to both business-men and economists.]

GHOSH (A.). New Horizons in Planning. A study of planning techniques with special reference to India's first and second Five Year Plans. Calcutta: The World Press, 1956. 9″. Pp. 141. 10*s*. 6*d*.

[The first part of the book is a description of recent theories and techniques of planning with particular reference to underdeveloped areas. It discusses the problems of "balances" in planning, the use of input–output analysis and linear programming and the value of the latest growth and capital formation models to planners. There is a section on development finance which advocates "a bold programme of deficit financing." The second part of the book is an analysis of India's first and second five-year plans. The author's faith in the efficacy of some of the planning techniques described may seem unrealistic to some students of Indian economics.]

India's Balance of Payments, 1948–49 to 1955–56. Bombay: Reserve Bank of India, 1957. 9½″. Pp. 80. *Rs.* 1/8

[This booklet contains a section on the concepts and methods of compiling India's Balance of Payments, and a section briefly reviewing its changes in the period. There are statistical tables and diagrams of the overall balance, of that with the sterling and dollar areas, and also with the United States, Britain, Pakistan, Western Germany and Japan.]

PRASAD (P.). Some Economic Problems of Public Enterprises in India. Leiden: Stenfert Kroese, 1957. 9″. Pp. 244. *f.* 14.50.

[Public enterprises, apart from the railways and some public utilities, were few in British India. They have become much more important in India's planned economy. In his opening chapters the author discusses general questions of administration, efficiency and financing, with illustrations from several countries. Later chapters are concerned with the particular problems of Indian public enterprises. The author believes that the departmental and limited company forms of organisation, commonly found in Indian Government concerns, are inefficient. He favours the public corporation type of administration, and the establishment of an Efficiency Audit Bureau and Management Service to improve the running and recruitment of State enterprises. The book has no index.]

SOVANI (N. V.), APTE (D. P.) and PENDSE (R. G.). Poona: A Re-Survey. The changing pattern of employment and earnings. Gokhale Institute of Politics and Economics, Publication No. 34. Poona: Gokhale Institute of Politics and Economics, 1956. 10″. Pp. 555. 25*s*.

[The two volumes of the *First Survey of Poona* were published in 1945 and 1952 respectively, and dealt mainly with data collected in 1936–37. This Re-Survey includes data up to 1953–54 and provides a comparison of some economic indices in the two periods. It is much narrower in scope than its predecessor, however, and is concerned mainly with social aspects of the community, namely population, family earnings, migration, occupational distribution, employment and housing. There is an abundance of statistical information. In these days of broad generalisations about growth and planning there is much to be said for the detailed municipal study provided here.]

American

ADAMS (L. P.) and ARONSON (R. L.). Workers and Industrial Change. A case study of labor mobility. Cornell Studies in Industrial and Labor Relations, Vol. VIII. Ithaca, New York: New York State School of Industrial and Labor Relations, Cornell University, 1957. 9″. Pp. vii + 209. $4.50.

[This is a study of the consequences in the local labour market of the permanent shut-down of the International Harvester's plants in Auburn, a small town in upstate New York, in 1950. Prior to the shut-down, International Harvester had been the largest employer in the area. The book is based on information obtained from a sample of the displaced workers and others in the area, and takes account of subsequent job experience as well as the immediate impact of the shut-down. The authors compare their findings with those of other recent case-studies of labour mobility in the United States. Among the topics considered are the role of the public employment service in finding new jobs for the displaced workers (found to be small), sources of public and private assistance, adaptability and responsiveness to wage-differentials, and the success or otherwise of secondary school education in providing realistic preparation for entry to the labour market. On wage-differentials, the conclusion reached is that although they certainly have some importance, they have less immediate effect on the choice of jobs than the mere availability of employment. One interesting finding is that wage-differentials have more influence relatively to other net advantages—interest of the work, etc.—with older workers than with younger ones.]

BARAN (P. A.). The Political Economy of Growth. New York: The Monthly Review Press (66 Barrow Street, New York 14), 1957. 8½″. Pp. x + 308. $5.00.

[To be reviewed.]

BEHRMAN (J. N.) and SCHMIDT (W. E.). International Economics. Theory, practice, policy. New York: Rinehart, 1957. 9″. Pp. xxv + 561. $6.50.

[This is a lively and up-to-date text-book for the American student. The main emphasis is on issues of policy, but theoretical questions are treated very adequately at a relatively untechnical level. There are also good historical sections. Despite the American slant, this book compares favourably in its usefulness to the British student with most elementary text-books on the subject.]

BLANK (D. M.) and STIGLER (G. J.). The Demand and Supply of Scientific Personnel. National Bureau of Economic Research General Series, No. 62. New York: National Bureau of Economic Research, 1957. 9″. Pp. 200. $4.00.

[The authors address themselves to the question whether there has been a shortage of scientifically trained personnel in the United States in recent years. Engineers are by far the largest class involved, and most of the authors' attention is devoted to them. "Shortage" is interpreted in an economic sense and not with reference to any absolute canons as to the desirable number of scientists to have. As a criterion of shortage or its absence, the authors take the movement of engineers' earnings, on which they have collected a large amount of data. They find that salaries of engineers, like most professional earnings outside the medical professions, have fallen relatively to average wage and salary earnings in the economy as a whole. Even within the professional class engineers appear to have fallen back slightly. On this reckoning the authors conclude that the case that there is a shortage is not made out. They acknowledge that market imperfections may make earnings an unsatisfactory criterion, but they do not think this invalidates their results in practice. In their discussion of this point they give full weight to the possibility of monopsonistic power exercised by a single employer, but they do not perhaps give sufficient stress to the possibility that ideas of "reasonable" or conventional salary (or salary relative to salaries in other occupations) may distort the working of competition. Having discussed the question of earnings, they proceed to consider in detail the forces affecting the supply of engineers and the demand for engineers and chemists and to treat more briefly the supply and demand situation for mathematicians and physicists.]

CARSKADON (T. R.) and SOULE (G.). U.S.A. in New Dimensions. The measure and promise of America's resources. A Twentieth Century Fund Survey. New York and London: The Macmillan Company, 1957. 11″. Pp. 124. 8*s.* 3*d.*

[This is a popular account of the economic and social characteristics and achievements of the United States, with lavish use of charts and illustrations. It is based on the Twentieth Century Fund's *America's Needs and Resources: A New Survey*, published in 1955.]

CORNU (A.). The Origins of Marxian Thought. Springfield, Illinois: C. C. Thomas (301–327 East Lawrence Avenue) (Oxford: Blackwell Scientific Publications), 1957. 8½″. Pp. viii + 128. $3.75.

[This is an essay in the history of political philosophy. The author traces how the general framework of Marx's philosophy evolved from the treatment of the problems of the relation between man and society in the writings of the early German idealists, of Hegel, and of Feuerbach and other members of the Hegelian left wing.]

CROWTHER (SIR G.). Balances and Imbalances of Payments. The George H. Leatherbee Lectures, 1957. Boston, Mass.: Harvard University Graduate School of Business Administration (London: Bailey & Swinfen), 1957. 8½″. Pp. 70. 16*s.*

[These lectures, delivered at the Harvard Business School, lead up to a specific conclusion—a conclusion which some readers may be surprised to hear from Sir Geoffrey Crowther, but which, as he points out, he himself first expressed as long ago as 1937. This is that the scarcity of the dollar and the consequent division of the world into dollar and non-dollar blocs is based on real causes and is likely to persist for as long as can be foreseen. The lectures are written in the author's characteristic and forceful style. The first is mainly devoted to enumeration of the possible balance-of-payments positions that a country can find itself in: creditor or debtor, borrower or lender, interest payments exceeding or falling short of net borrowing, etc. These are arranged in a sort of evolutionary scale, which Sir Geoffrey likens to the seven ages of man. No single country has passed through all of them, as he admits, and the progression from one to the next is not in all cases wholly logical; but it is an interesting exercise. The actual situations of the chief trading countries in 1937, in 1949–51 and in 1952–54 are then compared with the theoretical possibilities. In the second lecture Sir Geoffrey describes how since the end of the War a fair degree of freedom of trade and payments has gradually been established within the dollar and non-dollar worlds respectively, but not between them. Finally, the third lecture sets forth the reasons why in Sir Geoffrey's view the available mechanisms of adjustment cannot be expected to be sufficient to cope with the imbalance between the dollar and non-dollar worlds. These reasons are similar to those that have been advanced by Dr. Balogh and others and lay chief stress on the overwhelming strength of the United States economy relatively to the rest of the world.]

DAVID (P. T.) and POLLOCK (R.). Executives for Government. Central issues of federal personnel administration. Washington, D.C.: The Brookings Institution, 1957. 9″. Pp. x + 186. $1.50.

[This is a study of the problem of how to recruit senior executives for the federal service in the United States. A large part of it is taken up with discussion of the political aspect of the question

and the relationship between administration and the party system. After reviewing the present system and the proposals that have been made by previous writers on the subject, the authors come down on the side of those who favour restricting fairly narrowly the number of political appointments in the public service.]

DAVIS (R. T.). Performance and Development of Field Sales Managers. Boston, Mass.: Harvard University Graduate School of Business Administration (London: Bailey & Swinfen, Hyde House, West Central Street, W.C.1), 1957. 8″. Pp. xii + 357. 28*s*.

[This is a study, based on inquiries among fifty-four companies, of the functions in theory and practice of the field sales manager—the manager who is immediately in charge of the salesmen in a region and acts as the link between them and head office. In the author's opinion there has been too much tendency for the selection of these managers and the appraisal of their performance to be based on their abilities as individual salesmen, with too little regard to their administrative talents and skill in planning and in handling the salesmen under their control. He indicates from the experience of a certain number of the companies studied some techniques of selection, training and remunerating managers which might help to correct this tendency.]

FRIEDMAN (M.). A Theory of the Consumption Function. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9½″. Pp. xvi + 243. 38*s*.

[To be reviewed.]

GIBB (G. S.) and KNOWLTON (E. H.). The Resurgent Years, 1911–1927. History of Standard Oil Company (New Jersey). New York: Harper & Brothers, 1956. 9½″ Pp. xxix + 754. $7.50.

[To be reviewed.]

GORDON (M. S.) and AMERSON (R. W.). Unemployment Insurance. Berkeley, California: Institute of Industrial Relations, University of California, 1957. 7½″. Pp. 87. $0.50.

[This is a brief but reasonably comprehensive survey of unemployment insurance provisions in the United States, designed for the use of labour organisations, business-men, students and the general public. The authors consider the principles and problems involved as well as describing the existing arrangements.]

HENDRICKS (W. A.). The Mathematical Theory of Sampling. New Brunswick, New Jersey: The Scarecrow Press, 1956 (London: Bailey & Swinfen, 1957). 9½″. Pp. 364. 67*s*. 6*d*.

[This work is intended to be a self-contained treatment of the mathematical theory involved in the planning of sample surveys. Although a knowledge of mathematics is required, no previous acquaintance with other branches of statistical theory is assumed. The necessary theory is developed in an expository rather than a formal way, and use is made of a very large number of numerical examples, mainly drawn from the field of agricultural surveys. The result is a very full development of the intricacies of sample design, although here and there the reader may be in danger of not seeing the wood for the trees. The author's practical experience in the agricultural field ensures that his comments are shrewd and helpful. He places particular emphasis on the use of the analysis of variance as a means of illuminating the ways in which appropriate sample design can increase the reliability of sample estimates. Considerable space is devoted to the problem of non-sampling errors in survey work. The book is a welcome addition to the literature of sample surveys, but some eyebrows will be raised at the author's failure to distinguish between the views of Fisher and Neyman on fiducial probability and confidence limits. The typography is unusual, but not as distracting as it might first apppear.]

HORTON (D. C.). Patterns of Farm Financial Structure. A cross-section view of economic and physical determinants. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9″. Pp. 185. 36*s*.

[This is an elaborate study, based on cross-section data, of the relation between economic characteristics—size, composition of real assets, crop grown, etc.—of farms in the United States, on the one hand, and their financial structure, on the other—proportion of outside finance to farmer's own capital, proportion of outside finance coming from landlords and creditors respectively, sources of borrowing, etc. The data on which the study is based relate to 1939–40, but some material is also given for a comparison with 1930 and 1950.]

JOHANNESSEN (E.). The Hawaiian Labor Movement. A brief history. Boston, Mass.: Bruce Humphries, 1957. 8½". Pp. 181. $3.75.

[The author's aim is to provide a chronological account of the history of organised labour in Hawaii, with the stress on description rather than interpretation. Since the Second World War a high proportion of labour in Hawaii has been unionised, and over half of the strength of organised labour has been concentrated in one union, the International Longshoremen's and Warehousemen's Association. In the author's opinion the militancy of this union and its attempts to attain parity of labour conditions between Hawaii and the mainland have been extremely harmful to the Hawaiian economy, and might well be more so in the future in view of the precarious basis of the island's prosperity.]

LEIBENSTEIN (H.). Economic Backwardness and Economic Growth. Studies in the theory of economic development. New York: John Wiley (London: Chapman & Hall), 1957. 9½". Pp. xiv + 295.

[To be reviewed.]

MEYER (J. R.) and KUH (E.). The Investment Decision. An empirical study. Harvard Economic Studies, Volume CII. Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1957. 8½". Pp. xv + 284. 48*s*.

[To be reviewed.]

MIERNYK (W. H.). A Primer of Input–Output Economics. Business and Economic Education Series, No. 2. Boston, Mass.: Bureau of Business and Economic Research, Northeastern University, 1957. 9". Pp. 28. $1.00.

[This is an elementary introduction to input–output analysis designed for the use of American undergraduate students. The broad principles are well explained with examples. In a subsequent re-issue the author might with advantage clarify the treatment of gross private capital formation, which as it stands is rather confusing.]

NATIONAL BUREAU OF ECONOMIC RESEARCH. Financial Research and the Problems of the Day, by S. FABRICANT. 37th Annual Report. New York: National Bureau of Economic Research, 1957. 10½". Pp. 100.

[This report contains the usual very full accounts of the National Bureau's current activities and future plans. It includes the announcement of some interesting new projects, notably one directed by Moses Abramovitz on Economic Growth in the United States since 1870. The report is preceded by a long essay by the National Bureau's Director of Research, Solomon Fabricant, on Financial Research and the Problems of the Day. After enumerating three basic types of statistical material—national-income data, flow of funds data and balance-sheet data—Mr. Fabricant considers in more detail the issues involved in the national-balance-sheet type of analysis and reviews the work done by the National Bureau in this sphere to date. This leads him to questions arising out of the study of interest-rate data and of data relating to the financial experience of particular industries and to the question of the role of financial factors in policies for economic stabilisation.]

NUTTER (G. W.). Some Observations on Soviet Industrial Growth. National Bureau of Economic Research, Occasional Paper No. 55. New York: National Bureau of Economic Research, 1957. 9½". Pp. 13. $0.50.

[The author gives a new method of comparing rates of growth in the United States and the U.S.S.R. which shows the Soviet performance in a less favourable light than the usual type of comparison. The technique is to show for three years, 1913, 1937 and 1955, the lag in years of Soviet output in different industries behind United States output in those industries, *i.e.*, how many years earlier than the benchmark date United States output was at the Soviet benchmark level. The median lag for the different industries is found to be twenty-eight years in 1913, thirty-six years in 1937 and thirty-five years in 1955. The apparent inconsistency between the increase in Soviet backwardness, so measured, and the faster overall rate of growth in the U.S.S.R. is due largely to the fact that output tends to grow more rapidly at an early stage of an industry's development than later on.]

PATTERSON (G.) and FURNISS (E. S.). NATO. A critical appraisal. A report prepared on the basis of an international conference held at Princeton University in June 1957. Princeton, New Jersey: International Finance Section, Princeton University, 1957. 8½". Pp. 107.

[This is based on the proceedings of a Conference held at Princeton 1957. The participants were mostly private individuals, not officials, drawn from all the NATO countries. The authors of the Report describe the general tenor of the views expressed during the Conference, indicating the points on which there was not agreement, without attributing particular views to individual participants.]

PHELPS (C. W.). Accounts Receivable Financing as a Method of Business Finance. Studies in Commercial Financing, No. 2. Baltimore, Maryland: Commercial Credit Company, 1957. 9″. Pp. 65.

[Accounts-receivable financing involves an arrangement under which a financial institution buys its customer's open accounts, with recourse to him for credit losses. This form of financing has grown very rapidly in the United States since the War. The author describes the reasons for its use, the rates charged and the supplementary financing services offered by the institutions engaged in the business.]

RAYMOND (E.). Soviet Economic Progress. Because of or in spite of the government? New York: Rinehart, 1957. 9½″. Pp. 56.

[This consists of a series of brief extracts, mainly from official Soviet sources, relating to different aspects of the Soviet economy and its strengths and weaknesses. These extracts are linked together by a commentary by the author.]

REDER (M. W.). Labor in a Growing Economy. New York: John Wiley (London: Chapman & Hall), 1957. 9½″. Pp. ix + 534. 52*s*.

[This is designed as a text-book for undergraduate students offering a course in labour economics in American universities. The formal theory included has been deliberately kept at an elementary level, but the author endeavours throughout to use analytical methods in the treatment of practical problems. The empirical material is almost wholly American.]

ROBERTSON (H. M.). South Africa. Economic and political aspects. Durham, North Carolina: Duke University Press for the Duke University Commonwealth Studies Center (London: Cambridge University Press), 1957. 8″. Pp. x + 192. $3.50.

[To be reviewed.]

SHANNON (F. J.). The Conflict between Law and Administrative Practice in Valuation of Property for Taxation in Kentucky. Lexington, Kentucky: Bureau of Business Research, University of Kentucky, 1957. 8½″. Pp. 112.

[The conflict referred to is that the Kentucky Constitution lays down that property should be assessed for tax purposes at its full market value, whereas in practice assessments are much lower. In 1953 it was reckoned that on the average for the state as a whole real estate was assessed at less than a third of its full value. This is more than a merely book-keeping matter, since maximum rates of tax are laid down for local authorities, and the assessment official therefore effectively determines how much revenue they can raise. The author discusses the reasons for this state of affairs, which in his view are mainly political, and considers the prospects for resolving the conflict.]

STEIN (S. J.). The Brazilian Cotton Manufacture. Textile enterprise in an underdeveloped area, 1850–1950. Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1957. 9½″. Pp. xii + 273. 40*s*.

[This monograph provides an interesting history of the industry from its origins to the present day. The author points out that the commonly held idea that a long time-lag separated industrial development in Great Britain and other leading countries from industrial development in areas like Brazil is not altogether applicable to the Brazilian cotton manufacture. The industry had its origin in the middle of the nineteenth century, and many of the features of the cotton industry's history in Great Britain were paralleled with little or no time-lag in Brazil. The character of early industrial development in Brazil was much influenced by the character of its existing agrarian economy, notably the close link between producers and the State. Already in the 1890s the industry was receiving special favours from the State, and since 1930 these favours have attracted a good deal of criticism. The admittedly low standard of efficiency in the industry at the present time and its failure to expand domestic sales by lower prices are attributed at least partly to a long period of undue reliance on state support and protection.]

STUART (R. K.). Financing Public Improvements by the State of Maine. University of Maine Studies, Second Series, No. 72. Orono, Maine: University of Maine Press, 1957. 9″. Pp. 188.

[The author describes the present situation and its historical background, discusses the principles involved and puts forward a programme for future policy.]

TAYLOR (M. C.). Industrial Tax-exemption in Puerto Rico. A case study in the use of tax subsidies for industrializing underdeveloped areas. Madison, Wisconsin: University of Wisconsin Press, 1957. 9½″. Pp. 172. $3.50.

[It is widely believed that the exemption from tax allowed to firms setting up in Puerto Rico has been mainly responsible for the island's spectacular development in recent years, and the policy has

been much praised as a result. The author points out that this trend of opinion is in many respects surprising, since in the past students of public finance have generally been hostile to tax exemption as a scheme for attracting industry to an area, both on the ground that it is ineffective and because of its supposed inequity. He describes the administration of the Puerto Rico scheme in some detail and then seeks to measure its efficacy as an attraction to industry and to weigh its advantages and disadvantages. Most industrialists who have set up in Puerto Rico name tax exemption as the chief inducement that led them to do so, and there is no doubt that the benefit conferred is very substantial. Amounting as it does to a virtually complete exemption from all taxes, it is not surprising that it has proved more effective than the much more limited local schemes that have occasionally been adopted on the United States mainland. At the same time Mr. Taylor believes that the attraction has been to a considerable extent psychological and that wage differentials between Puerto Rico and the mainland really make much more difference to profits. He is also critical of the scheme inasmuch as the tax benefits granted bear no relation to need or to the advantage conferred on the Puerto Rican economy: firms making a loss get no benefit, and very profitable firms benefit greatly even if they employ little labour. He concludes that the shortcomings of the scheme are such that it would have been better to have experimented first with direct subsidies and to have resorted to tax exemption only if direct subsidies had proved a failure.]

TOSTLEBE (A. S.). Capital in Agriculture: Its Formation and Financing since 1870. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9½″. Pp. xxvi + 232. 48*s*.

[This is the third of a series of studies into long-term trends in capital formation in the United States undertaken by the National Bureau of Economic Research. The author provides measures of physical farm capital in five major categories since 1870 and measures of all financial assets used in farming since 1900, for the nation as a whole and for separate regions. The rate of growth of capital is compared with that of labour and output in the industry. A large number of interesting results stem from the inquiry, and the statistics provided by the author will no doubt be used extensively in future research. Agriculture is an industry where output has grown markedly faster than capital, whether land is included in capital or not. This conclusion is affected somewhat by the distinction between net output and gross output, since agriculture has been purchasing an increasing amount of materials and services from other sectors of the economy; but even if output is measured net, it has been growing faster than capital. Some marked changes in trend occurred round about 1910: up till that time both labour and capital employed in agriculture increased rapidly, and the rate of growth of output was not very much faster that that of these inputs; but after 1910, output continued to rise rapidly despite a fall in labour input and a considerable reduction in the rate of capital accumulation. Over the period as a whole additions to land amounted to over half of total additions to capital, although the proportion was somewhat smaller—not much smaller—after 1910 than before. On the financial side it is found that by far the greater part of farm capital formation has been financed out of farmers' own incomes throughout practically the whole of the period.]

TRIFFIN (R.). Europe and the Money Muddle. From bilateralism to near-convertibility, 1947–1956. Yale Studies in Economics, No. 7. New Haven, Connecticut: Yale University Press (London: Oxford University Press), 1957. 9½″. Pp. xxvii + 351. 40*s*.

[To be reviewed.]

TROY (L.). Distribution of Union Membership among the States, 1939 and 1953. National Bureau of Economic Research Occasional Paper No. 56. New York: National Bureau of Economic Research, 1957. 9″. Pp. 32. $0.75.

[This paper provides data derived from the records of some two hundred unions on union membership in the different states of the United States in 1939 and 1953. Differences in trends between the states are related to differences in industrial structure, initial extent of unionisation, etc.]

ZUPNICK (E.). Britain's Postwar Dollar Problem. New York: Columbia University Press (London: Oxford University Press), 1957. 9½″. Pp. 256. 45*s*.

[To be reviewed.]

German

EWALD (U.). Recent Developments of the World Fertilizer Market. A statistical analysis. Kiel: Institut für Weltwirtschaft, 1957. 9½″. Pp. 227.

[About half of the book consists of statistical tables showing production, consumption, imports and exports of the chief classes of fertilizer for every country for which statistics are available. In the text the author analyses the following aspects of the subject: the recent movements of fertilizer exports from western Europe, which in the past has been the chief exporting area; consumption and production of fertilizers in eastern Europe, especially East Germany and the U.S.S.R.; the growth of fertilizer surpluses in the United States; and the scope for increased consumption of fertilizers in the Far East.]

Dutch

Alternative Techniques of Production. Progress Report No. 2: A Case Study for Three Turning Operations. Rotterdam: Netherlands Economic Institute, 1957. 11¼". Pp. 25 + appendices.

[This lucid report is an analysis of the relative profitability, at different levels of output, wages and interest rates, of three techniques of lathing: in order of increasing degree of mechanisation, a centre lathe, a turret lathe and an automatic lathe. The cost data used were derived from empirical research, including time studies, but the authors regard the factual conclusions of their report as less important than the method employed. The more mechanised types of lathe have a larger capacity and therefore require a larger minimum output for economic use. This indivisibility plays a very large part in the results reached. The authors do not devote so much attention to the effect of the relative levels of interest rates and wages on the choice of techniques in circumstances where output is large enough to permit full use of the economies of scale with any of the three techniques.]

Israel

Drabkin-Darin (H.). Housing in Israel. Economic and sociological aspects. Tel Aviv: Gadish Books, 1957. 9½". Pp. 256.

[The author describes the policies and achievements of the state of Israel in providing the different types of housing required by the circumstances of the country: temporary camps for newly arrived immigrants, housing in agricultural settlements, new urban centres, etc. The author resists the suggestion that house-building absorbs too large a proportion of the nation's resources or is inflationary, on the grounds that it provides a way of absorbing unskilled labour which would otherwise be unemployed. Because of the rapid growth of the building materials industry in Israel house-building no longer makes great demands on imports.]

Sicron (M.). Immigration to Israel, 1948–1953. Falk Project for Economic Research in Israel and Central Bureau of Statistics, Special Series No. 60. Jerusalem: The Falk Project for Economic Research in Israel (24 Hillel Street), 1957. 9½". Pp. xix + 137. $2.00.

[The main object of this work is to present a fuller collection and analysis of data relating to the composition of immigrants to Israel than any hitherto available. Statistics are given relating to the volume and intensity of immigration to Israel, immigrants' country of origin, age structure, sex composition, marital status, family structure, participation in labour force and occupations abroad. Jewish immigration into Palestine between 1919 and 1948 is more briefly treated, and an appendix adds data on immigration in 1954 and 1955. Some of the conclusions are already familiar in outline—*e.g.*, the increasing proportion of non-European Jews in Israel's population—but the report serves to establish them more exactly and in more detail. An interesting comparison is made between the age-composition of immigrants to Israel and the age-composition of other waves of immigrants, *e.g.*, to the American continent in the nineteenth century. Although migration to Israel has to some extent had the characteristics of international migrations generally, such as a high proportion of young adults, some of the more recent movements of population to Israel from Asia and Africa have been substantially complete transplantations of communities, and the immigrants have therefore had the age-composition of the countries they came from rather than the typical immigrant age-composition.]

Japanese

The Smaller Industry in Japan. Tokyo: Asia Kyokai, 1957. 10". Pp. 148.

[This useful survey is one of a series of publications designed to give information about Japanese industry with a view, amongst other things, to assisting countries in the rest of Asia to profit by Japanese experience. Its subject is the place in the Japanese economy of manufacturing firms employing 300 workers or less. These firms give employment to 71% of all those engaged in manufacturing and account for 54% of manufacturing output. In many of these firms the standard of efficiency is low and the conditions of labour are poor compared with larger establishments, and the majority of them work on commission for wholesalers or larger sub-contracting manufacturers, thus enjoying little independence but bearing the risk of fluctuations in demand. The greater part of the book consists of an account of the chief industries in which small firms are found. Interesting general chapters at the beginning and end consider why it is that small firms have come to occupy such a prominent place in Japanese industry and what measures may be taken to promote their prosperity and improvement.]

Official

British

INMAN (P.). Labour in the Munitions Factories. History of the Second World War, United Kingdom Civil Series, edited by Sir Keith Hancock. London: H.M. Stationery Office and Longmans, 1957. 9½". Pp. xiv + 461. 35*s*.

[To be reviewed.]

ISLES (K. S.) and CUTHBERT (N.). An Economic Survey of Northern Ireland. Belfast: H.M. Stationery Office, 1957. 10". Pp. v + 646. 35*s*.

[To be reviewed.]

MOSER (C. A.). The Measurement of Levels of Living, with special reference to Jamaica. Colonial Research Studies, No. 24. London: H.M. Stationery Office, 1957. 9½". Pp. 106. 13*s*. 6*d*.

[This report takes as its starting-point a United Nations document published in 1954 on *International Definition and Measurement of Standards and Levels of Living*. The greater part of Mr. Moser's report is taken up with detailed consideration of four special aspects of the level of living in Jamaica to which he gave particular attention: education, nutrition, health and housing. Briefer attention is given to measures of income, expenditure and consumption, which the author did not study in much detail because previous investigators had dealt with them more thoroughly. In Mr. Moser's opinion, although national income per head is as comprehensive a measure of economic progress as any single indicator, it does not take account of by any means all the components in a country's level of living. One of his conclusions is that there is more room in this field of study than has commonly been recognised for the use of yardsticks or "standards" to judge the adequacy of levels of living and changes therein. These standards may be objective, such as standards of health or literacy or nutrition, or they may be defined in some way in relation to people's aspirations. In his summary chapter Mr. Moser considers the meaningfulness and practicability of combining different measures of each component of the level of living into a single index of that component and of then combining the resulting indices into a single grand index. He concludes by making suggestions for future work.]

PARKER (H. M. D.). Manpower. A study of war-time policy and administration. History of the Second World War, United Kingdom Civil Series, edited by Sir Keith Hancock. London: H.M. Stationery Office and Longmans, 1957. 9½". Pp. xviii + 535. 40*s*.

[To be reviewed.]

United Kingdom Financial Institutions. A pamphlet prepared by the Reference Division of the Central Office of Information. London: H.M. Stationery Office, 1957. 9½". Pp. 38. 2*s*. 3*d*.

[This provides a brief factual account of the origins, organisation and functions of the chief British financial institutions.]

SILCOCK (T. H.). Fiscal Survey Report of Sarawak, 1956, Kuching: Sarawak Government Printing Office, 1956. 13". Pp. 83. Malayan $5.00.

[Professor Silcock's terms of reference related to the fiscal problems of Sarawak within the framework of the present Development Plan and did not call for any appraisal of the Plan itself. The economic situation in Sarawak differs in some important respects from that commonly regarded as typical of underdeveloped areas: in particular, labour is scarce rather than in excess supply, and the Government of the Colony has virtually no control over credit. Notwithstanding this, Professor Silcock's forthright comments on the principles underlying fiscal policy in such an area give his report a general interest.]

International

COUNCIL OF EUROPE. Statistical Data for the Use of the Council of Europe, compiled by the Secretariat-General. Strasbourg: Documentation Section, Council of Europe, 1957. 9½". Pp. 253. 20*s*.

[This provides a wide range of demographic and economic statistics for the different countries of Europe in comparable form. It has been prepared at the request of a Committee of the Council of Europe. The Secretariat intends to issue revised editions from time to time.]

INTERNATIONAL LABOUR OFFICE. Introduction to Work Study. Geneva: International Labour Office, 1957. 11". Pp. xv + 349. 21*s*.

[The purpose of this book is to explain with illustrations the general principle and scope of work study rather than to serve as a complete text-book for a systematic course. None the less, it covers a large amount of ground lucidly and with good balance. It should be of value to economists interested in this method of raising productivity as well as to those concerned with its application in practice.]

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. The Economic Development of Jordan. Report of a mission organized by the Bank at the request of the Government of Jordan. Baltimore, Maryland: The Johns Hopkins Press (London: Oxford University Press), 1957. 9". Pp. vii + 488. 60*s*.

[The report describes the present economic situation of Jordan and outlines a programme of policy. Jordan's natural resources are limited, there is a very large refugee population, and the natural rate of population increase is very high—about 3% a year. In addition to these difficulties, much of the country's trade was formerly with the territory that is now Israel, and her natural transport routes lie through Israel, and these relationships have now been severed. In the plan proposed by the Mission, government action would be confined mainly to the provision of transport, credit institutions, research and such like facilities, and the Government would not assume the cost of directly productive facilities save in some special cases such as mineral development. For the rest the Mission believe that given the basic framework private enterprise will provide " an adequate response." The report admits, however, that implementation of its proposals would not lead to any appreciable reduction by 1965 in the number of wholly or partly unemployed, who at present constitute over a quarter of the labour force. Schemes of internationally financed relief would therefore still be needed. This might seem rather difficult to reconcile with the report's proposal that foreign aid for development assistance should be tapered off by 1965. The authors maintain, however, that Jordan's resources are inherently inadequate to support the present population and the natural increase that must be expected.]

INTERNATIONAL MONETARY FUND. Annual Report of the Executive Directors for the Fiscal Year ended April 30, 1957. Washington, D.C.: International Monetary Fund, 1957. 9". Pp. 211.

[The report contains a survey of developments in 1956 in the world-payments situation, in domestic financial and economic policies, in exchange practices and payments arrangements, and in gold production and prices, as well as an account of the Fund's own activities during the year.]

UNITED NATIONS. The Aging of Populations and its Economic and Social Implications. Population Studies, No. 26. New York: United Nations, 1957. 11". Pp. 168. 12*s*. 6*d*.

[After preliminary definitions, the authors give first a brief survey of the extent of the ageing of the population in different countries. They then analyse the causes of this ageing, partly in theoretical terms and partly on the basis of historical statistics and projections. It is found that the fall in mortality, in the form in which it has actually occurred, has had little effect on the proportion of elderly in the population. The reduction in fertility, on the other hand, has had considerable effect. The social and economic consequences of an ageing population are then analysed, with reference to the proportion of economically active to total population, changes in needs, and problems of pensions and income distribution. Here again the analysis is largely theoretical, and brings up many interesting points, some of them not very familiar. A final brief chapter assesses likely future trends. The text of the report is followed by eighty pages of statistics.]

UNITED NATIONS. Economic Developments in Africa, 1955–56. Supplement to World Economic Survey, 1956. New York: United Nations, 1957. 11". Pp. 97. 7*s*.

[The report treats separately the course of events in the three principal divisions of Africa. In North Africa economic activity declined in 1955 and 1956, partly because of unfavourable weather and partly because political troubles led to a decline in investment. In tropical Africa changes in world prices were the main influence on the non-subsistence sector of the economy, to which the report confines its attention. In the Union of South Africa growth continued, but at a slackened rate. The slackening in the rate of growth is attributed mainly to dearer money and a fall in the prices of some exports.]

UNITED NATIONS. Economic Survey of Asia and the Far East, 1956. Bangkok: United Nations, 1957. 11". Pp. 233. 18*s*.

[Most of the report is taken up by a country-by-country survey. This is preceded by a general review of the situation in the region and a comparative summary of the salient features of the development plans being pursued in the various countries.]

UNITED NATIONS. Economic Survey of Europe in 1956, including studies of European transport problems and income distribution in Western Europe. Prepared by the Research and Planning Division, Economic Commission for Europe. Geneva: United Nations, 1957. 11". Pp. 357. 18*s*.

[The latest issue of this indispensable Survey is divided into three parts. Part I, on Recent Economic Developments in Europe, contains chapters on current developments and long-term plans in the Communist countries, on developments during 1956 in Western Europe and on plans for freer trade in Western Europe. Part II is a special survey of costs, efficiency and long-term policy problems in European transport. Part III is a study of income distribution in Western Europe since the War. It contains chapters on changes in the level and structure of output and on income distribution by factor shares and by size groups.]

UNITED NATIONS. Railways and Steel. Prepared by the Steel, Engineering and Housing Section of the Economic Commission for Europe. Geneva: United Nations, 1957. 11". Pp. 63. 4*s*. 6*d*.

[This is the third of a series devoted to an examination of trends in the production and consumption of important steel products. While there is much that is uncertain in the future development of railways, especially with regard to their relation to other forms of transport, the conclusion is tentatively reached that the demand for steel by the railways is likely to remain at about the same absolute level as at present. This means that it will account for a declining proportion of total steel output. Moreover, the proportion of the total demand for steel for railways that will be met by the traditional exporters of railways materials and rolling stock—Belgium, France, the Saar, Western Germany, Luxembourg and the United Kingdom—seems likely to decline. This is on account of the increased production of rails and rolling stock in countries that were formerly large importers.]

UNITED NATIONS. Study of Inter-Latin-American Trade. Prepared by the Secretariat of the Economic Commission for Latin America. New York: United Nations, 1957. 11". Pp. 313. 22*s*. 6*d*.

[This contains statistical data collected by the Secretariat on the volume and direction of trade within Latin America and a lengthy review of the trade and payments policies pursued by each of the countries in the region. A concluding chapter deals with maritime transport in South America. Reciprocal trade between the Latin American Republics amounts to about a tenth of their total world trade and has tended to increase in relative importance since the War. There have also been some marked changes in its structure, due especially to the growth of trade in petroleum products, and these have given rise to a tendency to chronic balance-of-payments disequilibria.]

UNITED NATIONS FOOD AND AGRICULTURAL ORGANISATION. The State of Food and Agriculture 1957. Rome: F.A.O., 1957. 11". Pp. 171. 10*s*. 6*d*.

[This report contains a main chapter on the current world situation, followed by two chapters dealing with particular topics in more detail over periods longer than a year. These topics are, first, the factors influencing food consumption, and secondly, institutional changes since the War in land tenure, farm credit and agricultural co-operatives.]

UNITED NATIONS FOOD AND AGRICULTURAL ORGANISATION. Yearbook of Food and Agricultural Statistics, 1956: Production. Rome: F.A.O., 1957. 11". Pp. 456. 17*s*. 6*d*.

[This continues the F.A.O.'s regular series. New features in the present issue include official data on China not previously available and a section on Index Numbers of Agricultural Production.]

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